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Original Communications.

*IODIC PURPURA WITH FEVER.**

BY ALFRED STENGEL, M.D.,

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Among the symptoms of chronic iodic intoxication or iodism, eruptions in the skin are very frequent and significant. The well known form is acne, which may appear after a few doses, or not until other evidences of poisoning are pronounced. Boils or bullous eruptions are less frequent, and ecchymoses or purpuric lesions are occasionally seen. It is to these last named conditions that I wish to call attention in reporting the case detailed below.

Ricord appears to have been the first to call attention to purpura as a symptom of iodism, and in conformity with the views entertained at the time of his observations, in 1843, he attributed the eruption to a reduction of the fibrin of the blood. Ricord's case was a syphilitic who developed purpura on three occasions after administration of iodide of potassium. Ricord also refers to a case which he saw with Cruvel-

*Read before the Section on Medicine, College of Physicians, Philadelphia.

hier. Since his publication a large number of cases have been recorded. Many of the earlier ones occurred in syphilitic patients, and not unnaturally the cause of the purpura was as frequently thought to be the syphilitic taint as the drug administered. Indeed, Spencer Wells *(Medical Times and Gazette,* 1856, 2, p. 611) advised the administration of potassium iodide as the treatment for such cases. It is undoubtedly true that some of the cases were truly syphilitic purpuras, as Fox *(British and Foreign Medico-Chirurgical Review,* 1865) claimed in his case, though he admitted the possibility of iodic purpura, quoting Virchow's observation of this condition in a case of cancer. Baelz *(Arch. f. Heilkunde,* 1875), Behrend *(Berlin. Klin. Woch.,* 1878), Stephen Mackenzie *(Medical Times and Gazette,* 1879), and Zeissl *(Lehrbuch. d. Syphilis,* 2, p. 92) are among earlier writers who described undoubted cases of syphilitic purpura; but it is not my purpose to deal extensively with this form of purpura. I mention the references just quoted only in explanation of my acceptance of syphilis as a sufficient cause for purpura, and as an evidence that this element has been taken into consideration in the cases of syphilitics who developed purpura while taking iodide of potash. In most of these the rôle of the iodide was disclosed by the prompt effect of withdrawal and repeated administration of the drug. This is instanced in the report of Fournier *(Rev. Mens. d. Méd. et Chir.,* 1877, i, 653), one of the earlier discussions of the subject. He records three cases in which the eruption speedily followed administration of the drug, only to subside and again appear on discontinuance and resumption of the medication. The same recurrence of the rash was observed by Mackenzie *(loc. cit.)* in one of his cases, and by von Janovsky *(Monatschrift für Praktische Dermatologie,* 1886, v, p. 445), who reports the case of a woman of twenty-two, a syphilitic, who took 30 grains of potassium iodide daily. After ten days, headache, coryza, fever, epistaxis, and purpura upon the arms and legs, appeared. The purpura gradually increased until the iodide was stopped, when the eruption disappeared in ten days. When the drug was again tried, after three weeks, the purpura reappeared when she had taken 75 grains, but without fever.

Similar recurrences of iodic purpura have, however, been repeatedly observed in non-syphilitic patients. Among such cases that of Duffey *(Dublin Journal of the Medical Sciences,* April, 1880), which occurred in a patient suffering with mitral heart disease, that of Paul Raymond *(La France Méd.,* 1889, i, p. 389) in a woman under treatment for arthritis deformans, that of Vidal *(Journal of Cutaneous and Venereal Diseases,* 1886, iv, No. 3) in a patient with cardiac disease and ancient syphilis, and that of Bradbury *(British Medical Journal,* 1871, i, p. 120) in a rheumatic, are instances.

Character of the Eruption.—The character of the eruption varies very much. In some instances there is simply the appearance of minute ecchymoses without any other affection of the skin and without constitutional symptoms. Mackenzie (*Illustrated Medical News,* 1888, i) states that "the form of purpura that most commonly results from iodide of potassium consists of a number of minute circumscribed hemorrhages on the lower extremities, chiefly confined to the fronts of the legs. They resemble cases of rheumatic purpura in position and in that they usually come out in crops, but they differ from this disease in the almost entirely painless character of the attack. The spots disappear when the medicine is discontinued."

This description agrees in a general way with that given by Pignot *(Dictionnaire des Sciences Médicales,* 4 s. 16, p. 345), who states that the eruption occurs upon the legs, face, and body, more generally on the legs. It is discrete, petechial, and miliary, round or oval, from a pin-head to a millet-seed in size. There is no pain, nor any functional disturbance as a rule. It is very rarely attended with constitutional symptoms, then only in grave cases.

Other recorded cases, however, differ widely from these in the character of the eruption as well as in the associated symptoms. In the case of Duffey referred to before there was slight redness with itching of the dorsum of the feet, purpura of the legs, and acne of the forehead and of the region of the left shoulder. In Thin's case *(Medico-Chirurgical Transactions,* 1879), as well as in Elsner's, the purpura was associated with bullous lesions, and the same association has been noted by others.

In numerous instances the purpuric affection of the skin has been accompanied with hemorrhages from the mucous membranes or other purpuric manifestations. In the

case of Virchow, referred to, there were hemorrhages from the gums and genitalia; and in one case reported by Mackenzie himself there were marked purpuric phenomena in addition to the discrete eruption of the skin. The case was that of an infant of five months, with hereditary syphilis, to whom 2½ grains of potassium iodide were given. Three-quarters of an hour later the mouth and chin began to turn black, and the discoloration soon spread to the orbits and lips. The purpuric eruption visibly increased while being watched, until in an hour or so both the scalp and face were covered. The eyelids were closed and discolored, lips and chin were swollen and deep purple in color, while the bright red of the tongue and mucous membrane of the mouth presented a striking contrast. The cheeks showed numerous small spots of purpura, in which pressure showed no change. There were also a few spots on the upper arm, but none elsewhere. The next day hemorrhage in the hard palate was noted, and eczema behind the ears. Then the purpura spread over the deltoid to the upper arm. The spots were scattered over the forearm. The thighs and legs were covered with large and small purpuric spots. Two days later the eruption began to fade. The child died sixty-eight hours after the onset of the purpura. The autopsy showed purpuric hemorrhages in the skin of the face, ulcers in the cæcum with hemorrhages, and hemorrhages in the left suprarenal capsule and the testes, especially the epididymis.

In Abbé's case epistaxis complicated the last two of the six attacks; in von Janovsky's epistaxis preceded the purpura of the skin; while in Elsner's there were hematemesis and melena, as well as ecchymoses and bullæ in the skin.

In some instances the repetitions of the purpura have been numerous. In Ricord's case there were three distinct attacks; in one reported by Abbé *(Archives of Dermatology,* 1878, iv, p. 131) there were six attacks; Fournier mentions frequent recurrences; and other authors also refer to repeated eruptions without specifying their number.

Associated Symptoms.—Among the recognized symptoms of iodism a metallic taste in the mouth, swelling and tenderness of the gums, increased salivary secretion, nausea, coating of the tongue, and coryza make their appearance early and in the milder cases. The same symptoms may accompany or precede the purpuric eruption. Severe symptoms, and especially nervous manifestations, such as intense headache, neuralgic pains, and even paralyses, have been recorded in more profound intoxications. Certain peculiar symptoms giving the condition a resemblance to exophthalmic goitre or thyroidism will be discussed below in connection with the case reported.

Joint Manifestations.—Mackenzie made especial mention of the painlessness of the attacks, which in other respects resemble purpura rheumatica, but the case I am reporting and other instances in the literature show that the resemblance may be completed by the occurrence of swelling of the joints and severe pains. In Duffey's case there was purpura of the legs with severe pains in the knees, wrists, and shoulders, all of which symptoms subsided when the iodide was withdrawn. In Raymond's case (one of arthritis deformans) generalized pains accompanied the eruption, and in Vidal's there was severe pain in the legs and ankles. In the majority of cases, however, it is true that pain has not been a symptom of the attack.

Fever.—The occurrence of fever as one of the symptoms of iodism is not generally acknowledged, as it usually does not become pronounced, and is therefore easily overlooked if temperature records are not preserved; and from the nature of the cases in which iodide of potash is administered in large doses and continuously, it is unlikely that accurate observations of the temperature will be recorded throughout the treatment. There are, however, a number of instances reported in the literature of fever occurring in association with purpuric iodism. In one of Wilson Fox's cases *(British and Foreign Medico-Chirurgical Review,* 1865) there was purpura and a temperature as high as 102.2°. Pellizzara *(Archives of Dermatology,* 1881) refers particularly to the occurrence of fever with iodic eruption, and quotes from Zeissl and Fischer *(Wien. Med. Woch.,* 1859, No. 29), who mentioned elevation of temperature of the skin. In the case of von Janovsky the temperature rose as high as 101½° at the time of the epistaxis and purpura. With these exceptions, however, I do not find specific references to elevation of the temperature as one of the symptoms of iodism of the purpuric or any other form.

In most instances no reference is made to the temperature, and I assume that in many of the cases no record was preserved. In some cases, however, it is clearly stated that the temperature was normal.

Amount of Iodine Necessary to the Production of Iodism.—The symptoms of iodism here referred to generally attend subacute or even chronic intoxication. They may recur very frequently, and sometimes after the administration of exceedingly small doses of the drug. Robinson (*Lancet*, 1893, i, p. 471) records a case of a man who was taking one grain of potassium iodide three times daily. After six doses he complained of dryness in the throat, and six days later minute purpuric spots appeared on the arms and legs, especially near the elbow and thigh. The symptoms came on after the fourteenth day. Fox (*loc. cit.*) records the case of a man of thirty years with tubercular syphilides and recent rheumatism who was treated with iodide of potash in doses of five grains three times daily. After the second dose purpura appeared on the legs and arms, and other symptoms of iodism set in. These cases, however, are exceptional. In most instances the symptoms of iodism have not appeared until the patient had taken a number of doses of five or ten grains, repeated three or four times daily. Withdrawal of the drug has generally been followed by immediate improvement in the symptoms, with reappearance rather more easily on a second exhibition of the drug. In a few cases the purpura has developed more readily with the potassium salt than with other iodides. In one case sodium iodide was given without causing recurrence of the iodic purpura after this had subsided upon withdrawal of the iodide of potash. Ammonium iodide, however, caused a recurrence of the purpura; in other cases the ammonium, sodium, and potassium salts behaved exactly the same.

The following case illustrates the febrile purpuric type:

Mr. A. G., aged twenty-three, was admitted to the University Hospital January 5, 1901. The following history is recorded:

His mother is hemiplegic, having suffered an apoplectic seizure, and one sister died of a brain trouble. His father died of kidney disease. He does not recall any of the illnesses of childhood, excepting mumps and croup, the latter of which he had a number of times. In March, 1895, he fell a distance of 25 feet, striking the base of the skull, and after this was in bed for three months. For some time he was in a dazed condition; he recognized persons, but afterward remembered nothing of events. Has had repeated colds every winter since he was five or six years old. A year ago polyps were removed from his nose. There is no venereal history. He has lived a correct life in every way, using alcohol and tobacco moderately.

The present trouble began about five years ago, when he was attacked with a cold that lasted for three months. He was taken with attacks of asthmatic breathing, coming on twice a day at times, and lasting for a part of the day and then subsiding. There were intervals of entire freedom from these attacks for as much as several months, with subsequent recurrences. The attacks at first came on in the middle of the night and would last for about an hour. At first they were frequently attended with vomiting, but during the last four years he has not vomited in the attacks; and after the first six months the attacks ceased their exclusive nocturnal character, and occurred at all times of the day. The paroxysm is typically asthmatic. It comes on suddenly after a prodromal feeling of choking that lasts about an hour. Occasionally he has expectorated a little blood.

On admission the temperature was 98°, the pulse 84, and the respirations 20. There was a little cough with mucous expectoration, and a few râles were heard over both lungs.

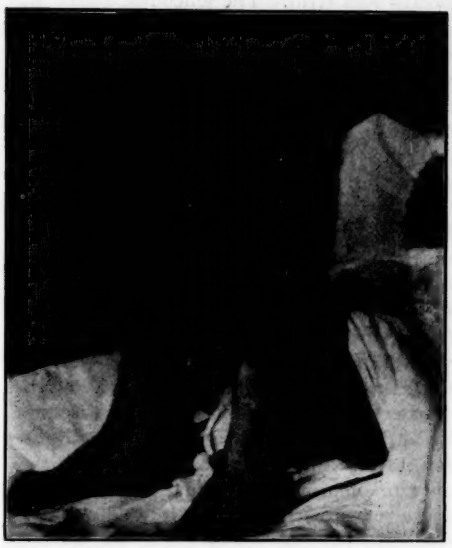
Examination of the blood showed a moderate leucocytosis (11,840), but otherwise practically normal conditions. The examination of the urine was entirely negative. There was no albumin, sugar, nor any other abnormal constituent.

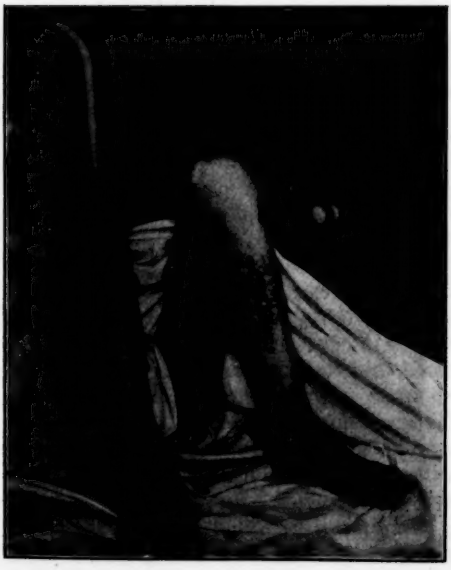
Physical examination: Well nourished; skin normal; pupils equal; conjunctivæ slightly injected, eyes otherwise normal; lips and ears slightly cyanosed; tongue coated, pharynx slightly injected; neck short and thick; thyroid normal; sternomastoid slightly prominent; glands palpable in axillary, inguinal, and cervical regions. *Chest:* Supraclavicular fossæ deep; infraclavicular fossæ also more pronounced than normal. Breathing costoabdominal; better expansion on right than left. Pulmonary resonance vesiculotympanitic. Little change on forced inspiration. The lungs extend one and a half to two fingerbreadths above clavicles. A few piping râles and prolonged

expiration on auscultation. *Heart:* Superficial area slightly smaller than normal; deep dulness a little enlarged to the right. Auscultation: Second heart sound accented at base. *Abdomen* normal excepting that the liver extends a fingerbreadth below the costal margin. Reflexes normal.

An attack of asthma occurred shortly after admission to the hospital, and subsequently repeated attacks took place. Examination for Curschmann's spirals was negative at first, but subsequently positive. There was moderate eosinophilia. Polyps were discovered in the nose and several removed. During his stay in the hospital, in January and February, he had one or two slight attacks of fever which were regarded as due to acute bronchitis or influenza. On one occasion his temperature for a short time reached 104°.

On February 12, potassium iodide, grains 5 t. i. d., was begun. On February 23 it was increased to grains 8 t. i. d. During the early part of March he seemed to be growing worse instead of better. There was continuous bronchitis, and at the same time the temperature rose to 101°, and then continued at this height or even higher. On March 19 the patient had several small hemorrhagic spots in the skin of the legs. The cause of the continued bronchitis and the elevated temperature was not determined. Previously all attacks of fever had been very temporary, lasting only a few days at the most. On this occasion it continued and steadily grew worse, and at times reached 102°, 103°, or 104°, never falling to the normal. At the same time the patient's condition was rapidly growing worse, and on March 20 he began to complain of pains in his knees. A note at the same time reads that "the cardiac condition does not seem to be changed." This note was made because a suggestion of a systolic murmur was audible and ulcerative endocarditis was suspected.





On March 21 he complained of pains in his left elbow and right foot. On this date, examination of the sputum showed Curschmann's spirals, bronchial casts, and streptococci, but no influenza or tubercle bacilli. The petechiæ of March 19 rapidly faded; on March 22 numerous hemorrhages appeared on both legs below the knees, and a few above the knees. The left forearm was also involved. These spots varied in size and were quite decidedly infiltrated and consequently elevated. On the posterior surface of the right calf there were several dark-blue patches of discoloration, but in other places the spots were bright-red and were peculiar in showing a tendency to a clustered character. They were raised above the surface and appeared in crops, so that those that had appeared a few days before were considerably faded. The gums were very tender and spongy and showed a bluish cyanosed line near the teeth. The

breath was fetid. The leucocyte count was 21,280. The cardiac sounds were unaltered. On March 23 the note states that the spots were very numerous, clustered as before, the individual petechia varying in size from a line to two lines in diameter. The clusters, however, were in places quite large from confluence of neighboring spots. The left forearm, to a less extent the right forearm, and both feet showed a considerable uniform swelling of the skin with erythematous redness and rather marked tenderness. The purpuric spots in these situations were slight as compared with the region of the calves and sides, where the eruption was much more marked, but the skin between the lesions showed no redness at all. The joints were probably slightly infiltrated, though there was some difference of opinion as to actual involvement of these parts. At one time it was suspected that the swelling around the joints was purely superficial. The patient was in a state of great suffering and prostration. The skin was leaky and bathed with a warm perspiration. The patient was apathetic and irresponsive. The thyroid gland which had been noted as slightly enlarged before now became decidedly enlarged. The pulse was rapid and small, the rate being 120. No changes were discovered in the auscultatory phenomena of the heart. There was marked tremor of the hands and other parts. Examination of the saliva showed abundance of iodine.

On March 22 the patient was given salicylate of soda, but when I saw him on March 23 I ordered a discontinuance of this treatment, and also withdrew the iodide of potash and ordered a mouth-wash of chlorate of potash with thymol. On March 24 the eruption was fading; the patient felt considerably better; the gums were still tender; the fever was less; and the pains in the feet and other joints had subsided. On March 25 the eruption was very much paler and the infiltration less. The only pain was a slight one in the left forearm. The saliva did not give the reaction for iodine. The leucocytes had fallen to 15,600, and the patient was very much improved in every way. In a few days after this recovery became complete, and the patient subsequently improved in every other way and left the hospital.

As my attention had been called to the occurrence of fever in the case of purpura just reported, I was led to examine records of other cases in which iodide of potash had been given more or less continuously. It happened that at the time of the occurrence of the purpuric case there was in my wards a patient with spinal syphilis who was receiving large doses of iodide of potash. His temperature was taken as a routine morning and evening, and I found that it was then running a mild febrile course; the highest elevations being about 100½° and the depressions about 98⅘° to 99⅝°. There was no explanation for this continued febricula in the man's general condition. As an experiment the iodide of potash was withdrawn, and within a few days the temperature subsided and remained normal so long as the iodide was withheld. Another case of which I have a record is the following:

S. F., a servant-girl of twenty-four, was admitted to the hospital with symptoms of cardiac disease. She stated that eight years before, while lifting a heavy weight, she was seized with pain in the left side, was unconscious for several hours, and she had not been altogether well ever since. Two years before admission she began to suffer with palpitations, shortness of breath, and distress after eating. The gastric symptoms subsequently became the most pronounced. The cardiac outline was practically normal. Over the apex, which was vigorous in action, there was heard a presystolic murmur and a highly accentuated first sound, and on palpation could be felt a slight systolic thrill. There was a diastolic shock over the pulmonary region, and a distinct systolic murmur was heard in that situation. The same murmur was transmitted to the aortic area. The patient was treated in a routine way by being put at rest and receiving digitalis and nitroglycerin. Subsequently she complained greatly of nervousness, shortness of breath, and palpitations, and also of the gastric symptoms. For some time there was almost daily vomiting with occasional streaks of blood. The Paquelin cautery was used with good effect. Sodium bromide eight grains and tincture of aconite two drops, three times daily, were administered, and the pulse-rate was reduced. The respirations, however, remained unchanged. This treatment was begun April 25, 1894. She had been complaining of much headache. This was improved by the treatment.

On July 3 potassium bromide ten grains and potassium iodide three grains, t. i. d.,

were ordered on account of anginoid pains, and the iodide was increased until on July 10 the note reads: "KI increased to grains 10." On July 12 the note reads: "Has symptoms of iodism, tongue swollen, teeth sore, great pain in left carotid region extending to head on that side. Withdrew potassium iodide and bromide and gave acetanilid with sodium bicarbonate every two hours." The next day morphine was given every second hour to relieve the pain.

The patient's temperature after she first entered the hospital in February was with practically no exception about normal, though a few times it was above normal at the evening hour, and on July 3, the day the iodide and bromide of potash were given, the temperature had the usual character, and so continued until the 11th, when it reached 100°. The pulse at the same time became accelerated, and after this the temperature was constantly above normal during ten days.

Several other less certain instances of elevation of temperature have occurred in my service, but I do not refer to them, as the cause of the temperature was not ascertained at the time, and may have been due to slight complications not recorded in the histories.

In the two cases here referred to the symptoms attending the fever were so mild that it would easily have been possible to overlook its existence in a patient who was not under treatment in a hospital, and therefore not under constant observation. For this reason, I believe, more than for any other, the existence of fever as one of the symptoms of iodism has been overlooked.

Symptoms Suggesting Graves's Disease.—Reference has been made above to certain symptoms suggesting exophthalmic goitre. The patient whose case I have reported had marked tremor, decided enlargement of the thyroid gland, rapidity of action and palpitation of the heart, and great relaxation of the skin, with sweating. These symptoms were not attended with exophthalmos, but were in themselves sufficient to suggest a relationship of the patient's condition with Graves's disease. This relationship has been referred to by a number of recent authors, as Jarmin (*Rev. Med. de la Suisse Rom.*, 1899, p. 301) and Gautier (*ibid.*, p. 618). Both of the authors named state that the symptoms of chronic iodism may be identical with those of exophthalmic goitre, and relate illustrative cases. These facts may perhaps be interpreted as suggesting an actual state of chronic iodism in Graves's disease. Many investigators, who perhaps would be unwilling to accept such a relationship, believe that excessive activity of the thyroid gland (hyperthyroidism) is the essential cause of exophthalmic goitre. It is well known that iodine compounds are found in this gland and no doubt secreted by it. The bearing of these facts may be that which has been suggested. However this matter may be, the occurrence of symptoms like those of exophthalmic goitre in some cases of chronic iodism is undoubted, and was, I believe, shown in the case I have reported.

Diagnosis.—The recognition of iodic purpura in most instances causes little difficulty to any one familiar with the occurrence of this form of skin eruption as a symptom of iodism. In instances like that I have reported, in which there was some suspicion of a possible cardiac disease, and in which fever followed by a purpuric rash developed, it is easy to see that the suspicion of ulcerative endocarditis would be entertained and would cause great difficulty in diagnosis. There were, however, some points of distinction in the rash itself, and the accompanying symptoms of iodism did not leave us long in doubt regarding the nature of the case. I have frequently observed that in cases of iodic acne, in which the lesions were pronounced, there was a tendency to a grouping or clustering of the spots in exactly the same way as we found the purpuric lesions in the case reported. There were not in my case any associated bullæ or vesicles or acne, such as have been observed by others in iodic purpura, but the lesions were so pronounced and so suddenly developed that their resemblance to the occasional petechial eruption found in ulcerative endocarditis was only remote.

The symptoms accompanying this eruption—fetid breath, soreness and some sponginess of the gums, and tremor of the extremities, with great moisture of the skin, rapidity of the heart's action, and swelling of the thyroid gland—all contributed to make the diagnosis in this case easy.

*QUININE RASH, WITH REPORT OF A CASE.**

By Horatio C. Wood, Jr., M.D.,
Instructor in Medicine at the Philadelphia Polyclinic College.

Cases of eruption brought about by quinine, while not by any means rarities, are still uncommon enough to warrant the report of the following case, which occurred in the service of Professor Riesman at the Polyclinic College for Post-graduates:

Miss A. C., aged thirty-five, occupation laundress, was brought to the clinic with the following history: She had taken two days previously, as a tonic, the following prescription: tinct. nux vomica, 1 ounce; tinct. cinchona comp., enough to make 8 ounces; two teaspoonfuls three times a day. Within a short time after taking the first dose she experienced stinging sensations along the forearm. A short time after this these areas became red. When seen the eruption presented the following appearance: a number of spots equally distributed over the extensor and flexor surfaces of the forearm, regular in outline, almost perfectly circular, from two to five centimeters in diameter, deep-red in the center, shading slightly toward the periphery, and surrounded by a slight macular rash. The temperature of the skin in the immediate neighborhood was distinctly elevated to the touch. There was at first, according to the patient's description, some induration around the spots, but this had mostly disappeared when patient was seen. Some of the spots had already faded and were copper-colored, in contrast to the bright red of those in active inflammation. There was slight itching. Temperature 99⅘°; pulse 88; no marked constitutional disturbances, no involvement of the mucous membranes. A placebo was ordered, and four days later the patient was seen again. The spots had faded to a marked degree, some of them actively desquamating. There had been since her visit some pain on using the left arm. Unfortunately the patient did not return again to the clinic, and we are unable to give the exact time for recovery, but at the last visit she was well on the road toward it. Patient said she had had a vesicular eruption five years before, following the use of quinine for malaria.

*Read before the Philadelphia County Medical Society, Nov. 13, 1901.

The compound tincture of cinchona, of which the patient took 105 minims, contains according to the U. S. Pharmacopœia not less than 0.25 per cent nor more than 0.5 per cent of total alkaloids, making the dose which the patient took equivalent to not over half a grain of quinine.

Bergeron and Proust have made a careful study of the quinine eruption occurring in those engaged in the manufacture of the alkaloid. The eruption which occurs among the workmen is not due to a local irritation, but to the absorption of the drug, since it occurs on all parts of the body. In some cases from merely going into the room where the drug is manufactured sufficient seems to be absorbed through the lungs to cause an eruption. Bergeron and Proust class the eruption not among professional diseases, but as an idiosyncrasy, since it occurs in a comparatively small proportion of the workmen. It takes the character, under these circumstances, rather of eczema than of an erythema, which ordinarily follows the internal administration of the drug. Permanent immunity toward quinine is very rarely acquired among workmen who have once had an attack of the eruption. They quote, for example, the case of a workman who after an eruption lasting several days, still working in the quinine, finally became insusceptible to the drug. He then changed his occupation, and returning a few days later to the quinine factory had an extremely active eruption, attended with desquamation on the face, the hands, the thighs, and scrotum. It seems, however, among these workmen to be still more generally the rule that one who has once had a quinine rash must change his occupation, or be subject to more or less constant irritation of the skin. They quote, however, as an exception to this, one case which had acquired an immunity which had remained with the patient for ten years: "The acclimatization is very exceptional, and the susceptibility which predisposes certain individuals to the eruption becomes more intense when the individual has once undergone the first attack of the trouble."

Quinine rash is of interest to the general profession on three grounds: that of diagnosis, cause, and treatment.

Diagnosis.—The eruption following quinine may take one of a number of forms, and occasionally is atypical of any regular skin disease. Very frequently, however, it may resemble eruptions occurring from

some other cause so closely as to make a diagnosis almost impossible save from the history of the case. Not only may it resemble the milder skin affections, but has borne such resemblance to more serious troubles, such as scarlet fever or syphilis, as to make the diagnosis very difficult.

The following case is reported by Levassor: A man aged thirty-eight took for intercostal neuralgia half a gramme of quinine sulphate at 8 P.M. One and a half hours later he had chills, headache, and tinnitus aurium. At 2 P.M. he experienced sensations of heat and itching on the internal surfaces of the thigh and on the face. Shortly afterwards the face was injected and slightly swollen, and a uniform scarlet redness was present over the trunk and limbs. The mucous membrane of the mouth and pharynx was also red. Tonsils were not swollen nor painful. Temperature was elevated. In two days the case began to desquamate, and at the end of a week had completely recovered. The diagnosis of scarlet fever was made. Four days later a recurrence of the intercostal neuralgia induced a second dose of quinine, which was followed by precisely the same symptoms as the first dose. The patient then said he had an idiosyncrasy toward the drug.

French reports another case in which the diagnosis of scarlet fever was made, which proved afterward by a second attack to be due to quinine. In this case the patient had taken five grains of quinine three times a day for one day. The eruption was a diffuse erythema, accompanied with miliary vesicles on the forearm. To further complicate the diagnosis the tongue presented the typical strawberry appearance indicative of scarlet fever, and the fauces were also injected.

Haralamb reports a case occurring in a syphilitic, in which the diagnosis between a specific eruption and a quinine rash was made only by a test. A man aged forty-seven, syphilitic, took one gramme of sulphate of quinine. The next day he had a bullous eruption on the lips, preceded by burning and itching. Later he took two doses of one gramme of quinine; some hours after the first dose he felt a pricking and itching on the lips, hands, and scrotum. Two days later there appeared on the lips confluent bullæ containing a limpid liquid; these bullæ burst and left in their place a bleeding surface, which was soon covered with a blackish crust. Eight months later the patient took one gramme of quinine one day, another gramme the next day. Three days later bullæ appeared on the left hip, and on the left hand a spot brownish-red in color, having the dimensions of a quarter; violent itching on back of hand; also bullæ on each foot and on the scrotum. These bullæ bursting left eroded surfaces of a reddish color. When admitted to the hospital there was on the edge of the lower lip a thin crust, blackish in color, extending the whole length of the edge of the two commissures. The lip was edematous, and on palpation the skin was felt to be infiltrated; the rest of the lips was covered with whitish scales. On the right arm was a reddish plaque, size of a dime, infiltrated, and covered with a yellowish crust. On the posterior part of the thorax, near the base of the neck, was a large erythematous patch, infiltrated with red, the size of a silver dollar. Lesions of a similar nature were scattered all over the body and on the genitalia. In order to confirm the diagnosis patient was given half a gramme of quinine, and the patches which had begun to fade immediately took on a bright color and new ones appeared. The test was repeated the next day. The eruption lasted one week.

Quinine eruptions may be conveniently divided into the following groups: The scarlatiniform, the urticarial, the bullous, the purpural, the rubeoloid, and the erythematous. Outside of these groups there have been reported isolated cases which cannot be placed in any of these classes. David and Revilliod, for example, report the following case:

A man was ordered 75 centigrammes of quinine morning and evening. On the third day of treatment the man complained of itching in the palms of his hands and on the forearms, internal surface of the thighs, knees, and back of the foot. Examination showed a redness in spots, which disappeared on pressure. The next day the parts oozed abundantly. He was thought to have an eczema; patient said, however, he had had several similar attacks following quinine. The drug was stopped. Next day the skin became dry, and some days after complete desquamation took place.

Schamberg reports a case in which quinine always caused a balanourethritis; while in a case of Schneck the untoward effect of quinine was apparently limited to the production of a coryza.

Reports.	Age.	Sex.	Dose.	When appeared.	Character.	Itching.	Constitutional symptoms.	Mucous membranes affected.	Desquamation.	Duration.	Remarks.
1. Duvall	31	F.	5 grs. twice daily.	3d day.	Scarlatinal.	Yes.	Yes.	.....	Yes.	12 days.	Had frequently taken quinine without bad effects.
2. Veeder	.....	.....	"Small."	.....	Scarlatinal.	.....	.....	.....	.....	Disappeared when drug stopped.	No details; second attack later.
3. French	.....	F.	5 grs. t. i. d.	1 day.	Scarlatinal.	.....	Yes.	Yes.	.....	.....	Diagnosed as scarlet fever until recurrence (see text).
4. Levassor	38	M.	0.5 gm.	6 hours.	Scarlatinal.	Yes.	Yes.	Yes.	Yes.	1 week.	Diagnosed as scarlet fever until recurrence.
5. Bazelis	.....	F.	1 gm.	1 day.	Scarlatinal.	.....	.....	No.	No.	6 days.	Second attack from 0.5 gm. later.
6. Rivet	.....	M.	0.6 gm. in 2 days.	2 hours.	Scarlatinal.	Yes.	Yes.	Yes.	.....	1 day.	Similar attack later.
7. Garraway	40	F.	1 gr.	2 hours.	Scarlatinal.	.....	Yes.	.....	Yes.	Few days.	Similar attack later.
8. Hemming	Old	F.	1 gm.	12 hours.	Scarlatinal.	Yes.	Yes.	.....	Yes.	3 weeks.	Two previous attacks.
9. Dennig	7	M.	.....	10 minutes.	Scarlatinal.	Yes.	Yes.	.....	.....	.....	Had attacks later up into manhood (see text).
10. Prentiss	20	F.	32 grs. in 24 hrs.	1 day.	Scarlatinal.	.....	Yes	.....	Yes.	7 days.	
11. Smith	23	M.	4 grs. in 2 doses.	Few hours.	Scarlatinal.	Yes	No.	.....	.....	Few days.	Two similar attacks in next few days.
12. Falligant	18	F.	5 grs. t. i. d.†	2 days.	Scarlatinal.	.....	.....	Yes.	Yes.	.....	Given cinchonidia on account of idiosyncrasy.
13. Johnston	37	M.	.....	2 days.	Bullous and scarlatinal.	Yes.	.....	No.	Yes.	5 weeks.	30 drops tr. cinchona; history of previous attacks (see text).
14. Leclere	33	M.	1 gm.	3 hours.	Roseola.	Yes.	.....	.....	No.	About 2 days.	Repeated attacks during two months' treatment.
15. Daubenf	23	F.	1-4 gm. daily.	8th day.	Roseola.	.....	.....	.....	.....	1 day.	Second dose similar eruption.
16. Daubenf	40	F.	2-4 gm. daily.	.....	Roseola.	.....	.....	.....	.....	7 days.	Did not appear until suspension of drug.
17. Daubenf	26	F.	2 gm.	.....	Roseola.	.....	.....	.....	.....	1 day.	No details.
18. Daubenf	.....	M.	3 gm.	8 hours.	Roseola.	.....	.....	.....	.....	4 days.	No details.
19. Da benf	49	M.	.....	.....	Roseola.	.....	.....	.....	.....	3 days.	No details.
20. Grellety	.....	M.	0.5 gm.	1 day.	Roseola.	.....	Yes.	.....	.....	.....	Several similar attacks.
21. Levassor	55	M.	0.5 gm.	2 hours.	Roseola.	Yes.	.....	No.	.....	1 day.	Had had previous attacks.
22. Levassor	52	M.	0.5 gm.	1 hour.	Erythema.	Yes.	Yes.	.....	Yes.	3 days.	Second attack two weeks later.
23. Bazelis	.....	M.	0.2 gm.	1 day.	Erythema.	.....	.....	.....	Yes.	.....	
24. Little	.....	M.	.....	.....	Erythema.	.....	.....	.....	.....	.....	No details.
25. Revilliod and Odier	.....	F.	"Large."	2 days.	Erythema.	.....	.....	.....	.....	4 days.	
26. Prevost	21	M.	1.5 gm. daily.	2d day.	Erythema.	Yes.	No.	.....	.....	1 day.	
27. Bergeron	.....	F.	.....	1 day.	Erythema.	Yes.	.....	.....	.....	.....	Two gm. cinchona powder; second attack four days later.
28. Yeo	.....	M.	6 grs. in 2 doses.	Few hours.	Erythema.	Yes.	.....	.....	.....	4 days.	Had previously taken it without bad effect; similar attacks later.
29 Bergeron and Proust	.....	F.	2 gm.	1 day.	Erythema.	Yes.	.....	.....	.....	8 days.	Attacks two years later.
30. Katzenbach	.....	F.	4 grs.	Few days.	Erythema.	.....	Yes.	.....	.....	.....	
31. Leggatt	.....	.....	1¼ grs.	2 days.	Vesicular erythema.	Yes.	No.	.....	.....	.....	
32. Wood	25	F.	2 grs.	2 hours.	Urticaria.	Yes.	Yes.	.....	.....	.....	Patient was aware of idiosyncrasy.
33. Hunt	.....	F.	3 grs.	Immediate.	Urticaria.	.....	No.	.....	.....	Few hours.	Had taken quinine without bad effect, but had one attack previously.
34. Morrow	.....	M.	2 grs.	Few hours.	Urticaria.	Yes.	.....	Yes.	.....	.....	Had previously taken quinine without bad effect; subsequent similar attacks.
35. Witherington	21	F.	.....	.....	Urticaria.	.....	Yes.	.....	.....	.....	Produced abortion; later given hypodermically without bad effect.
36 Walker	.....	M.	2 grs. repeated.	2 days.	Urticaria.	.....	.....	Yes.	.....	.....	Patient also susceptible to belladonna.
37. Wigglesworth	52	F.	1 gr. repeated.	1 hour.	Purpura.	Yes.	Yes.	.....	Yes.	30 days.	
38. Vepau	50	F.	Several doses 1 gm.	3d day.	Purpura.	.....	.....	.....	.....	9 days.	Second trial brought out same eruption.
39. Vepau	.....	F.	.....	2 days.	Purpura.	.....	.....	.....	.....	.....	Bleeding from gums, nose, and bowel.
40. Vepau	12	M.	.....	Few days.	Purpura.	.....	.....	.....	.....	10 days.	Bleeding from gums.
41. Gauchet	.....	F.	0.1 gm. daily.	.....	Purpura.	.....	.....	.....	.....	.....	Bleeding from gums; patient was aware of idiosyncrasy.
42. Schenck	Old	F.	10 grs.	.....	"Purplish blotches."	.....	.....	.....	.....	24 hours.	No details.
43. Elliott	43	F.	5 grs.	2 hours.	Bullous.	Yes.	.....	Yes.	.....	11 days.	
44. Haralamb	47	M.	1 gm.	1 day.	Bullous.	Yes.	.....	Yes.	.....	1 week.	
45. Tilow	.....	.....	⅔ gr.	.....	Rubeoloid.	Yes.	.....	.....	.....	.....	Involvement of lymphatics.
46. Farquharson	14	M.	10 grs. t. i. d.	4th day.	Rubeoloid.	Yes.	Yes.	.....	No.	.....	
47. Swetnam*	.....	M.	.....	Few mins.	Erythematous urticaria.	.....	.....	Yes.	.....	.....	
48 Dumas*	.....	F.	0 3 gm.	20 mins.	Erythematous urticaria.	Yes.	Yes.	.....	Yes.	Few days.	Had four attacks following quinine.
49. Rivet*	.....	M.	0.5 gm. b. d.	.....	Erythematous urticaria.	Yes.	Yes.	.....	.....	.....	Eruption began after first dose, growing steadily worse until drug stopped.
50. David and Revilliod	.....	M.	1.5 gm. d ily.	3d day.	Eczema.	Yes.	.....	.....	Yes.	Few days.	Several previous attacks.
51. Bouvard	50	M.	0.5 gm. daily.	2 hours.	"Red spots."	Yes.	No.	.....	.....	8 hours.	Recurrence daily for eleven days.
52. Thin	.....	M.	2 grs.	.....	Urticaria.	.....	Yes.	.....	.....	5 hours.	Has taken quinine since without bad effect; apparently only one attack.
53. Creuzé	.....	F.	⅖ gm. daily.	3d day.	Urticaria.	.....	.....	.....	.....	1 day.	Hydrobromate of quinine—in all 2 gm. taken.
54. Creuzé	.....	.....	0 45 gm. daily.	2d day.	Urticaria.	.....	.....	.....	.....	48 hours.	Subsequent attack from single dose of 0.45 gm.
55. Schenck	.....	F.	5 grs.	.....	Coryza.	.....	.....	Yes.	.....	.....	No details.
56. Schenck	.....	M.	20 grs.	.....	"Blisters."	.....	.....	.....	.....	.....	No details.
57. Schamberg	57	M.	"Small."	.....	Balanourechritis.	.....	.....	.....	4 hrs.	.....	Several attacks.
58. Field	.....	F.	5 grs.	.....	Not given.	.....	Yes.	.....	Yes.	.....	Patient aware of idiosyncrasy.
59. Owings	.....	F.	.....	.....	"Peeling."	.....	.....	.....	Yes.	.....	Patient colored; similar attack later.

*Quoted from Bouvard. †Cinchonidia sulphate.

Concerning the comparative frequency of these eruptions, out of 60 cases which I have collected from literature (see table) 18 were classed as erythema,* 12 as scarlatinoid, 9 as urticarial, 5 as purpuric, 2 as bullous, and 2 as rubeoloid. There were 4 cases of mixed eruptions, 3 being urticarial and erythematous, and 1 bullous-scarlatinoid. In 5 of the cases the description was insufficient to allow of a proper conclusion. Eczema was noted in 1 case.

There seemed to be no predisposition toward any special area of the body. In some cases the eruption was limited to the face or limbs, while in many cases it was equally distributed all over the body.

Two points of great interest from a diagnostic standpoint, especially in those cases resembling scarlet fever, are the question of the involvement of the mucous membranes and the occurrence of desquamation. Unfortunately many of the authors quoted have not mentioned specifically whether or not these complications existed. Out of sixty cases, including my own, fourteen were reported to have desquamated† and three not to have desquamated. In eleven cases the mucous membranes of the throat were reported to have been affected, and in three cases not to have been affected. Since either involvement of the mucous membranes or desquamation would seem to be sufficiently interesting symptoms to have been noted by the physician, it may be fairly taken for granted that in those cases where it was not mentioned they were not present. On this basis we may conclude that the mucous membranes were affected in about eighteen per cent of the cases, and twenty-three per cent desquamated. The eruption appeared, as a rule, within one day after taking the medicine. In one case, that of Dennig, it was noted within ten minutes of the ingestion of the drug; while in the case of Hunt it was said to have followed immediately.

The eruption appeared in one hour or less in 8 cases; in one day or less in 21 cases; in over one day in 9 cases.

The latest period at which the eruption was noted to appear after the single dose was two days, of which there are several instances (see table). The reported durations are as follows: Under one day, 4 cases; one to three days, 12 cases; four to seven days, 9 cases; over one week, 10 cases. The shortest duration reported is that of Bouvard, lasting eight hours. The longest is five weeks (Johnston).

Cause.—In considering the predisposing causes of the rash, it is equally prevalent among persons of all ages from seven to sixty-five years. It is interesting to note in this connection the case of Dennig, in which the first rash reported to have followed quinine occurred at the age of seven years, when it was diagnosed as scarlet fever. Subsequent rashes occurred at intervals throughout the patient's life, into manhood. There seems, also, to be little difference in sex; in thirty-one cases the patients were female, in twenty-five cases male, and in three cases the sex was not mentioned.

The size of the dose seems to have little bearing upon the severity or the probability of the rash. In the case of Johnston the eruption, which was very severe, occurred after two doses of 15 drops each of the tincture of cinchona, representing not over one-third of a grain of quinine.

A man aged thirty-seven had previously had experience with quinine rash. He was ordered 15 drops of tincture of cinchona as a tonic, of which he took two doses. In two days he began to complain of itching on the genitalia and on the face, which later became intolerable. The whole body was covered with a scarlatinoid eruption, with vesicles on the face. These vesicles turned to bullæ, and later bullæ were present on the heel, the ball of the foot, the toes, the palms of the hands. From some of the larger lesions as much as half a pint of serum was taken. Seven days after the ingestion of the drug the face was much improved, but the feet and hands were worse. "The whole horny covering of the palms depended in the shape of half-filled bags of fluid; the skin of the fingers being raised from the tip to the last articulation." On the soles of the feet the bullæ had coalesced and were even larger. Exudation began and continued for some days; recovery was complete in five to six weeks, although much delayed by the exquisite tenderness of the denuded surfaces of the hands and feet. The mucous membranes were never affected. The treatment employed consisted of an astringent wash of

*I have included under the head of erythema not only those so designated by the authors, but also those classed as roseola.

†Of these fourteen cases of desquamation, seven were classed as scarlatinoid. Two of those reported as non-desquamating were among the scarlatinoid group.

calomel, zinc, and black wash. Later diachylon and zinc ointment was used.

Some of the cases, especially those of the earlier writers, have followed truly heroic doses; for example, in Daubeuf's cases he gave from one to four grammes (15 to 60 grains) of quinine sulphate. It is noteworthy that in those cases where the dose has been large the eruption seems to have been as a rule less severe than where the dose was small.

The most potent predisposing cause is certainly an idiosyncrasy toward the drug, as suggested by the fact that a small dose calls forth such marked irritation. In twelve cases the dose has been not over three grains. This idiosyncrasy, apparently in the majority of cases, the patients have had during their whole life, as in the case of Dennig. In some cases, however, the patient seems to have acquired the peculiarity toward the drug late in life. Hunt reports a case of a woman in whom severe eruption followed three grains of quinine, the patient having previously taken very large doses without any difficulty. The idiosyncrasy once acquired seems to follow the patient a long period of time; for example, in the case of Morrow, the man had previously taken large doses of quinine without any bad effects, but two grains of quinine brought out a rash, which disappeared after a time. As long as two years later, during an attack of malaria, one-grain doses of quinine caused a similar violent attack of urticaria. Out of sixty-one cases sixteen appeared to have had attacks previously; nineteen are reported to have had subsequent attacks, as tests from the drug or accidentally.

According to Morrow, if a patient has once experienced dermal trouble from the ingestion of quinine the idiosyncrasy will follow him through life. Although this appears to be true as a general rule, Thin reports a case, without much detail, where two grains caused an urticaria in a man who had previously, and who did subsequently, take the drug without bad effects.

When we come to the consideration of the exciting cause of this eruption our lack of knowledge of the chemico-pathological changes prevents any definite conclusion. Two chief theories concerning the mechanism of this eruption have been brought forward. Levassor believes the eruption to be due to a vasomotor paresis produced by the quinine; this explanation, however, will hardly suffice in those cases where there has been an active inflammation, sometimes severe enough to have caused a marked elevation of the temperature. A much more likely explanation is that the quinine being eliminated through the skin acts as a direct irritant. Although Schottin* failed to find quinine in the sweat after its ingestion, Landerer* and Guyochin have both determined its elimination through the skin. The latter observer asserts that it is excreted through the skin in the form of quinidine. Morrow (Drug Eruptions, 1887, p. 105) quotes several cases, one from his own practice, in which the topical application of quinine produced local eruptions; showing that the drug is capable in certain cases of acting as a direct local irritant to the skin. The observations of Bergeron and Proust at first sight might seem to confirm this conclusion, but as noted above these eruptions seem rather to be due to the absorption of the drug than to its local influence.

Treatment.—The rash following quinine belongs to that class of diseases in which an ounce of prevention is worth a pound of cure. Unfortunately, however, it seems impossible to foresee in any case that a patient has an idiosyncrasy toward the drug unless there has been a previous unfortunate experience; and indeed even this test fails because in many cases the patient had previously taken the drug without any disagreeable symptoms. In those cases in which it is known that the patient has an idiosyncrasy toward quinine, and it seems imperative to use this substance, the suggestion of Witherington may prove of value. In a case reported by this observer the administration of quinine called forth repeatedly an active eruption of the skin, until it was administered hypodermically, after which the patient took large doses without any trouble.

After the eruption has once manifested itself purely symptomatic treatment seems to be indicated. Mildly astringent applications, such as dilute acetic acid, or zinc oxide, are indicated. The use of saline laxatives to open the bowels, and nerve sedatives in those cases where there is accompanying excitement, should be employed according to indication.

LITERATURE.

Bouvard: Thesis, Paris, 1883.
Bazelis: *Écho Méd. du Nord*, 1897, i, 313.

*Quoted by Husemann: Pflauzenstoffe, 1882, p. 1442.

Bergeron and Proust: *Ann. d'Hygiene*, 1876, xlv, 482; xlvi, 17.
Creuze: *Journ. de Thérap.*, Paris, 1878, v, 813.
Duval: *Maryland Medical Journal*, 1889, xxi, 3.
Elliott: *Journal of Cutaneous and Genito-Urinary Diseases*, 1888, vi, 326.
Falligant: *New England Medical Gazette*, 1883, xviii, 120.
Farquharson: *Trans. Clin. Soc. London*, 1879, xii, 25.
Field: *New York Medical Record*, 1878, xiv, 427.
Fowler: *New York Medical Times*, 1883-4, xi, 33.
French: *Medical and Surgical Reporter*, 1888, lix, 294.
Guinon: *Bull. et Mem. Soc. Méd. d'Hôpitaux*, Paris, 1897, xlv, 240.
Haralamb: *Ann. de Dermat. et Syph.*, 1895, vi, 1148.
Johnston: *Journal of Cutaneous and Genito-Urinary Diseases*, 1896, xiv, 266.
Katzenbach: *New York Medical Journal*, 1886, xlviii, 281.
Little: *Medical Summary*, 1898-9, xx, 21.
Levassor: Thesis, Paris, 1885.
Morrow: *New York Medical Journal*, 1880, xxi, 244.
Owings: *Maryland Medical Journal*, 1883-4, x, 454.
Pratt: *Detroit Lancet*, 1879-80, iii, 56.
Prentiss: *Philadelphia Medical Times*, 1879-80, x, 166.
Ruysten: *Bull. Méd. du Nord*, 1896, xxxv, 530.
Schenck: *Journal of the American Medical Association*, 1894, xxiii, 202.
Schamberg: *University Medical Magazine*, 1892-3, v, 333.
Smith: *British Medical Journal*, 1878, ii, 359.
Tilow: *New York Medical Record*, 1898, liv, 422.
Thin: *London Medical Times and Gazette*, 1879, i, 421.
Veeder: *New York Medical Record*, 1886, xxx, 569.
Walker: *British Journal of Dermatology*, 1893, v, 212.
Wigglesworth: *Boston Medical and Surgical Journal*, 1883, cix, 587.
Witherington: *Mississippi Valley Medical Journal*, 1887, vii, 295.
Wood: *University Medical Magazine*, 1892-3, v, 180.
Yeo: *Trans. Clin. Soc. London*, 1888-9, xxiii, 193.

*CULTURE PRODUCTS IN THE TREATMENT OF TUBERCULOSIS.**

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In presenting a paper before this society upon the subject which I have chosen, I recognize full well that there is no specific remedy for tuberculosis, which is recognized by the medical profession generally; none which corresponds to antitoxin in diphtheria, the iodides and mercury in syphilis, or quinine in malaria; yet there are certain remedies which, while they have enjoyed only a limited trial by the profession, are found to have a specific action upon tuberculous tissues wherever found.

That the value of these products has not been recognized is due to a misconception of what should be expected of such remedies. Antitoxin is recognized as the anchor of hope in diphtheria; yet the profession well knows that, to be efficacious, it must be used early; and all things being equal, the prognosis varies with the early or late administration. So it is with other diseases. The earlier the case falls into the physician's hands, the better. In surgery, we know the knife is a specific for many troubles; yet its field of usefulness is limited, and after a certain point in the disease has been reached this specific fails. While the field of these specifics is limited, yet their value is recognized, and in no way impaired by the fact of this limitation. On the other hand, the profession bends every energy to bring the cases under treatment during the period when the remedies are valuable. In the case of tuberculosis, however, the profession has not been satisfied with a remedy of limited value. It has been unreasonable, and demanded that a remedy to be useful and to be recognized must not only cure tuberculosis, but remove dead and decaying tissue; not only cure the disease, but remove all results caused by the disease. Such demands are unfair and preposterous. If the same test were applied to other remedies, how many would stand? In tuberculosis we must demand no more of a remedy, and no less, than in other diseases. As the followers of the healing art, we should seize upon everything that will help, and apply it to the advantage of the patient, not discard even the smallest thing that will aid us to combat disease. To correctly estimate the value of a specific remedy in tuberculosis, we must properly define our disease. We must distinguish between tuberculosis and consumption. Tuberculosis in its early stages—that is, while it is pure tuberculosis—is a very curable disease, yielding as readily to treatment as typhoid fever or pneumonia. But when this pure tuberculous process has changed, and its place has been taken by ulcerations, cavities, cheesy nodules, and these often surrounded and embedded in fibrous tissue—in other words, when consumption has supervened—then the picture is different. We have not pure

*Read before the Los Angeles Academy of Medicine, Nov. 8, 1901.

tuberculosis to deal with, but the results of tuberculosis. Tuberculosis itself will yield readily to treatment, but these results are very difficult to combat, and a remedy for the former should not be expected or required to remove the latter. It would be as reasonable to ask of a remedy for a surface ulcer to remove the resulting scar. So, if we have a remedy at our command which can be shown to have a specific action upon tuberculous processes, we should hail it with delight, not demand of it that it remove cavities and cheesy nodules; but we should improve our method of diagnosis so that we might recognize the disease while it is in the purely tubercular stage, and while the remedy is applicable.

Advances in the field of medicine, as elsewhere, are slow to be recognized. Every new theory must force its way against the prejudices of preconceived ideas; and, if at all revolutionary, meets most bitter opposition. Harvey, when he had called his *confrères* together and made a thorough demonstration of the circulation of the blood, is reported to have said: "Alas, I cannot make a single man over forty-five years of age believe it!" Although vaccination has almost driven smallpox from civilized lands, yet we now and then meet so-called physicians who are opposed to vaccination. The germ theory of disease is doubted by some, and the efficacy of antitoxin is not unquestioned. Is it any wonder then that the value of culture products in tuberculosis is not recognized?

It is unfortunate that the field of medicine is so large that we cannot prove the value of new theories for ourselves. Such independent work and thought would be wholesome, but with the cares and responsibilities which are forced upon us, we can only investigate some small field wherein our greatest interest lies, and this in a very unsatisfactory way. The greatest portion of our knowledge we are obliged to take second-hand from men whom we recognize as authorities; and, when we know how often they are mistaken, it behooves us to do as much original investigation as possible. Conservatism is a safeguard, and it is praiseworthy, but it should not lead to blindness. New methods of combating disease should be weighed carefully and tested thoroughly before acceptance or rejection; but it is hardly fair or just for the great majority of the profession to reject a remedy, although they have never tried it, simply because certain noted men say it is useless, when at the same time other equally noted men are obtaining good results by its use. In the examination of sputum, one positive evidence of bacilli will outweigh a dozen negative results; so in the employment of new remedies one unquestioned result should outweigh a dozen failures. By the use of the culture products in the treatment of tuberculosis many cures have been made; but these have been lost from sight because in certain other cases cures were not effected.

In 1890 the medical world was startled by the announcement that Professor Koch had discovered a lymph which would cure tuberculosis. The news was received with delight. Unfortunate victims from all parts of the world looked to Berlin for life. Physicians left their busy practices, and went to see the great master administer his reputed cure. Perhaps there never was a discovery made in medicine from which such great results were expected. But, alas, how quickly these hopes were blasted! Those who saw the administration of the remedy at this time of unfortunate trial were so disappointed in not seeing patients in the last stages of consumption restored to health that they overlooked all good results that were obtained, and returned to their respective homes with nothing but hostility in their hearts toward the new lymph. They did not take into consideration that tuberculin was a new remedy on trial for the first time, and that its limitations and the proper mode of its administration were to be determined by clinical experience.

It must be remembered that Professor Koch was forced to disclose his remedy before he was ready, and before he had determined the mode of its action, or had learned the proper method of administration. He was in a new field, and should have had the assistance of the medical profession in determining the use of his remedy. But with that respect for authority which is characteristic of the German race, those who believed the remedy to be used in a faulty manner were afraid to say so, lest they should offend the master; so the improper administration continued, with its disastrous results to tuberculin.

A careful study of the literature of the time should convince any fair-minded man that, whether or not the remedy possessed any virtues, it was not used in a proper way. And when we consider it in the light

of our present knowledge of the culture products, we are able to point out the mistakes which were then made, and judge it according to its actual worth.

In the first place, Professor Koch recommended its use only in the early stages. In this he was right, for its curative value lies in its action upon the newly formed or recent tubercles. While there are areas of greater or less extent even in advanced cases where recent tubercles are found corresponding to the more recent advances of the disease, yet when a remedy of such great importance is on trial it is wrong to cripple its usefulness by the choice of improper cases. If used properly we can expect and often see the recent tubercles disappear from a patient's lungs, in whom the disease is far advanced, and whose vitality has been much reduced; but when the eyes of critics are sharpened, it is better to confine the remedy to those cases wherein it is known to be of value. In spite of Professor Koch's recommendations, patients whose lungs were riddled with cavities, and whose constitutions were worn by the long-continued drain of suppuration, and whose vitality was destroyed by continued high fever, were subjected to treatment, with only the result that should have been foreseen—disappointment. In order to have satisfied those who were posing as critics of tuberculin, it would have been necessary for the remedy to have removed dead and dying tissue, to have cured suppurating foci, to have removed all symptoms resulting from a heart long overburdened, and to have restored to normal a system whose organs were all more or less diseased. When such a remedy has been found, it will be a specific, not only for tuberculosis, but for all diseases to which mankind is heir. But even in these cases, unsuitable as they were, had the remedy been administered in the proper doses good results might have been obtained, and at least no harm could have been done.

The second mistake which was made was the administration of too large doses. This dosage depended upon the erroneous view which Professor Koch held as to the manner in which tuberculin acted. He believed that the end desired was the destruction of the granulation tissue surrounding the tubercles, thus allowing the defensive forces of the body to attack the germs *in situ;* or by liquefaction to secure the expulsion of the tuberculous tissue. In order to produce this result doses were given which caused severe reactions, both local and general. The temperature was often elevated to 104° and 105° F., and the remedy administered at such intervals that the patient was kept in a constant feverish condition. As a consequence the patients lost appetite, became emaciated, and soon succumbed; and all such results were recorded as scores against tuberculin. Instead, they should have been considered as due to the *improper use* of tuberculin. Strychnine is a valuable remedy and capable of producing brilliant results when administered in doses of 1/60 to 1/20 of a grain, but when given in 1-grain or 2-grain doses it destroys the patient. This poisonous effect is one of the characteristics of the drug, and is taught to the profession; but it in no way handicaps the remedy, for the result desired is obtained without the poisonous effects. So it is with tuberculin. In small doses it is capable of producing beneficial results; in large doses it produces poisonous results. But the fact that it was administered in poisonous doses almost exclusively in the early period of trial in 1890 and 1891 caused the poisonous symptoms to be considered as the only ones which the remedy was capable of producing. Instead of recognizing the brilliant results in lupus, and early stage cases of pulmonary tuberculosis, even when the remedy was used in what would be considered to-day a faulty manner, and thus making the physician's armamentarium richer by one valuable remedy, hostile critics could see nothing but harm; so they gave out the erroneous idea, from which the medical world has not yet freed itself, that tuberculin can produce no good results, but on the contrary is liable to do much harm. To show the method of administration, I will cite some examples from the literature of that time.

January 17, 1891, a patient in von Leyden's* clinic had a paracentesis made, removing a clear, serous exudate. Examination showed râles in the right apex, relatively dull percussion note, slightly tympanitic, and diminished respiration. The spleen was somewhat enlarged. Temperature 100.4° F.; next day after the operation, 102.5° F. On the 19th an injection of two milligrammes of tuberculin was given. By February 12 the patient had received ten injections, the last being 50 milligrammes. During the period the patient became rap-

**Berliner Klin. Wochenschrift,* 1891, p. 237.

idly worse. On February 10 the temperature reached 104° F., where it remained continuously until the patient's death on the 19th of February. Reutimeyer* reports a case in which he gave eleven injections in eleven days, in spite of reactions of 104° F.

These two cases are not exceptions, but such was the method employed generally when tuberculin was first put upon trial. Had these patients received as an initial dose one-tenth milligramme, and then a gradually increasing dosage, so as to avoid fever reactions, they would have had the benefit of the specific action which the remedy possesses over tuberculous foci; many of them would have been benefited, some would have been cured, and culture products to-day would be warmly praised by the medical profession in the treatment of tuberculosis.

Besides being held accountable for the effect produced when used in unsuitable cases, and when administered in poisonous doses, tuberculin was also held responsible for all post-mortem findings. Pathologists who before had found so little interest in tubercular lungs that they had only given them a casual glance, now began to make the most minute examinations. Every finding was carefully recorded and ascribed to the advent of tuberculin.

Perhaps the work of Virchow had more to do with the discrediting of tuberculin than that of all other critics combined; and, strange to say, those who have quoted him have made his utterances much more hostile than they really were. Virchow made the post-mortems and recorded his findings; but much of the interpretation that has been put upon them is not his, but that of others.

One of the commonest objections that has been urged against tuberculin is that it is prone to produce acute miliary tuberculosis; and critics assign the authority for this statement to Virchow. This he did not say. The error comes from a juggling of words. He said that in the various organs of the body "miliary or submiliary nodules were observed," but did not ascribe them to the remedy, except in a suggestive way, saying:† "I have only shown what we have found; I believed—and I think there is here sufficient evidence — that this exhibition would show the magnitude of the danger which might arise. How frequently this danger arises, in what cases it arises, by what it is especially caused, are questions that can be definitely decided only after long research." Krause,† in a review of Virchow's criticisms, says: "In order that they might account for these miliary tubercles, so frequently observed, Virchow and his pupils, especially Hansemann, assumed that the eruption of tubercles occurred regularly during the injections. For this assumption both master and pupil are without a proof, because pathological anatomy has not yet found a criterion by which one can determine the age of a tubercle." To make tuberculin responsible for these "miliary and submiliary nodules," it would be necessary at least to show that they occurred only during its administration; but these same miliary nodules are found when tuberculin has not been administered. Petruschky‡ reports that he has observed constantly fresh miliary crops around old tuberculous foci in consumptives who have died with evidences of secondary infection, but who had never received tuberculin.

That acute miliary tuberculosis could be so frequently produced by the injection of tuberculin as to make it one of the chief dangers of its administration is almost too absurd to receive notice; but since it has been so generally believed, we will examine into the supposed danger. Acute miliary tuberculosis can only be produced in one way, and that is by tubercle bacilli finding their way into the general blood stream, either "by the rupturing of a tuberculous focus directly into a pulmonary vessel, or into the thoracic duct." How often this happens we may judge from the investigations of Kossel,§ who together with a number of other investigators examined the blood in 800 cases that were treated with tuberculin, with only three positive results, and one of these doubtful. He expressed his opinion as follows: "I am convinced after a great number of negative results that a dissemination of tubercle bacilli into the general blood stream of patients treated with tuberculin does not take place." That such an accident might occasionally happen when the remedy was administered in doses suffi-

*_Berliner Klin. Wochenschrift_, 1898, p. 124.

†_Berliner Klin. Wochenschrift_, 1891, p. 191.

†_Journal of Tuberculosis_, vol. ii, p. 246; translated from _Zeitschrift fuer Hygiene und Infectionskrankheiten_, vol. xxxiii, 1900.

‡Paper before Berlin Congress; quoted in _Journal of Tuberculosis_, vol. ii, p. 63.

§ _Berliner Klin. Wochenschrift_, 1891, p. 471.

cient to cause high local as well as general reactions can be believed; that it would happen during the proper administration of tuberculin can scarcely be conceived. However, granting that such an accident should occur during either the faulty or proper administration, it would carry little evidence against the remedy, for a focus which would break down so easily under the use of the remedy would have likely broken down without it, and, scattering the bacilli in the blood stream, cause the same acute miliary tuberculosis.

Another supposed danger attending the use of tuberculin was that it might "mobilize latent foci" which were "apparently innocent." Such a result has never been shown; so the burden of proof still rests upon the critics. And, granting that the dangerous results which were pointed out did actually obtain under the gross misuse to which tuberculin was subjected, it would have absolutely no weight in the consideration of the remedy when administered properly.

Virchow said:* "I think that we may now with certainty say that any process that can be brought about by tuberculin can also come about without that remedy, but the course certainly often seems to be extraordinarily hastened."

Even in spite of the disastrous results caused by bad selection of cases, and improper dosage, there were a few men who could not help seeing the true value of the remedy. These began to use it cautiously, and with one accord determined that its proper administration consisted in beginning with small doses and gradually increasing as toleration was established, but always avoiding marked local reactions and general reactions entirely. Under this mode of administration, von Bardeleben, Guttmann, Renvers, Ehrlich, Petruschky, Cornet, Goetsch, Turban, Krause, and many other noted men abroad, as well as von Ruck, Whittaker, Denison, and others in America, report excellent results. It is the general experience of all those men, who have carefully and painstakingly sought to do the remedy justice, that tuberculin is a very useful remedy, and that it has a specific action in tubercular cases. Professor Petruschky† says: "If in its (tuberculosis) treatment we desire to attain success, we must bring to our resources all means which are available to medical science, and a prominent one of these is undoubtedly tuberculin. After nine years of trial of the remedy it is possible to arrive at a conclusion of its value. Only a comparatively small number of physicians have used and studied this remedy continually during this time, but it is significant that these have arrived at a favorable judgment of its value."

Dr. Goetsch* reported his experience in one hundred and seventy-five cases of pulmonary tuberculosis treated with tuberculin during the past ten years. Of the cases treated, one hundred and twenty-five, or seventy-one per cent, were cured. This report was made at the suggestion of Professor Koch, and to it he appended a note, in which he said: "All physicians who have had considerable experience with tuberculin treatment, and have published the same (Spengler, Turban, Petruschky, Krause, Thorner, Heron, Rembold, Baudelier), assert that if the treatment is restricted to purely tuberculous and not too far advanced cases—that is to say, non-febrile cases of pulmonary tuberculosis—the influence of the remedy is favorable without exception." Should not the testimony of these clinicians, whose experience has extended over the entire period from Koch's announcement in 1890 to the present time, outweigh the doubt expressed by the hosts of physicians who have never given the remedy a trial? Again, I repeat, *one positive result should outweigh a dozen failures.*

I have endeavored to present in a clear light the circumstances under which tuberculin, the first culture product used in the treatment of tuberculosis, was given its trial by the medical world, and I have endeavored to show why it has been held in such disrepute. Now let us make a more careful study of tuberculin itself, and those other culture products which have grown out of it.

Soon after the germ theory of disease was propounded, bacteriology became the most active branch of medicine. In the laboratories the action of germs was carefully studied. In 1883 Charrin† discovered that the blue color sometimes seen on wounds and dressings was due to an organism, which, when inoculated into animals, caused death by septicemia. He found also that by inoculating the animals with steril-

**Berliner Klin. Wochenschrift,* 1891, p. 191.
†Paper before Berlin Congress; reported in *Journal of Tuberculosis,* vol. ii, p. 62.

**Deutsche Medicinische Wochenschrift,* 1901; quoted in *Journal of Tuberculosis,* vol. iii, p. 277.
†*Arch. Gén. de Méd.,* Paris, 1882, vol. ii.

ized cultures of the same bacillus they were rendered immune to the inoculations by virulent cultures. Brieger and Frankel* found that the filtered culture fluid of the diphtheria bacillus, when heated to 60° or 70°, had protective properties, rendering guinea-pigs insusceptible to inoculations with diphtheria virus.

Such observations as these, many of which were made at that time, led to the conclusion that pathogenic organisms produce a certain substance during their growth which is inimical to the organisms themselves.

The observation which led to the discovery of tuberculin was as follows: Professor Koch found that when healthy guinea-pigs were injected with virulent cultures of tubercle bacilli, during the first few days the wound healed; but after two weeks nodules formed, which broke down and continued ulcerating until death. But guinea-pigs already tubercular, when inoculated at first showed the same small wound; however, nodules did not form, only a general induration appeared about the point of inoculation, which later became necrotic, sloughed off, and quickly healed, without the lymph glands even becoming infected. When, instead of virulent cultures, dead cultures were used in healthy guinea-pigs, a local suppuration occurred; while in tubercular guinea-pigs, even small doses caused death; but if the cultures were much attenuated and administered very gradually, the disease, unless too far advanced, came to a standstill. From these observations, Koch concluded that tubercle bacilli, during their growth, produce a substance which has curative properties in tuberculosis. After a series of experiments he produced tuberculin, which is the culture fluid upon which bacilli have been grown, concentrated to one-tenth its original volume, and filtered.

Klebs found that tuberculin contained substances both beneficial and toxic, and by certain methods of treatment produced tuberculocidin and antiphthisin, for which he claimed the advantage of tuberculin, without its toxic working substance.

One of the most enthusiastic workers in the field of culture products is our own fellow countryman, Dr. Karl von Ruck, of Asheville, N. C. When Koch made his announcement, von Ruck hurried to Berlin, and through his friendship with Dr. Paul Guttmann had special opportunities offered him to study the new remedy. While he saw the mistakes that were being made in the administration of tuberculin, he also noted the good results that it was capable of producing.

Coming home, Dr. von Ruck began experimenting in his own laboratory, and as a result in a few years produced tuberculinum purificatum, which was made by boiling the culture fluid containing the bacilli, *in vacuo*, at a temperature of 130° F. for two or three months. By this prolonged boiling and maceration a considerable portion of the proteids from the body of the bacillus were brought into solution.

If the culture fluid contained the substance which was beneficial, it must come from the bacillus; hence the bacillus must contain it, either as secretion or excretion. Now, instead of using the culture fluid alone or in part, Koch produced a new remedy by the pulverizing of dried cultures in a mortar and mixing them in distilled water. The mixture was then thoroughly centrifuged. This was given forth in 1897 as tuberculin R. In this preparation Koch believed that he had obtained a true solution of the bacillus, hence obtained the most complete remedy that could come from cultures. It was shown that this preparation was an emulsion containing not only fragments of bacilli, but entire bacilli, which were still virulent; hence the preparation was soon withdrawn from the market. However, it has since been freed from this disadvantage, and used with marked success.

In 1896 Dr. von Ruck succeeded in producing a true solution of the tubercle bacillus, which he calls the watery extract of tubercle bacilli. The method of producing it is as follows:*

"The tubercle bacilli are filtered out of the rapidly growing and highly virulent culture. After washing with distilled water for the removal of the remains of the culture fluid, they are dried in a vacuum desiccator. Next they are powdered in an agate mortar, and then extracted with sulphuric ether. This extraction removes the fats. They are again dried and powdered as before, and their further extraction takes place in sterilized distilled water over a vacuum bath, with a temperature of 120° F. The proteids becoming dissolved in the distilled water, the fluid is then decanted and filtered through porcelain, when finally

*Untersuchungen über Ptomains, dritte Theil., s. 85, 1886.

*_Therapeutic Gazette_, June, 1897.

the amount of proteids is determined and the preparation standardized to a certain per cent."

This is entirely free from culture fluid, and is the most refined of all the culture products, and its efficiency has proven to be superior in the hands of all who have used it.

Thus we can see a gradual evolution in the production of these culture products. First, the pure culture fluid was used—tuberculin; then a purified culture fluid—tuberculocidin and antiphthisin; then a mixture of culture fluid and proteids from the bodies of the bacilli—tuberculinum purificatum; then an emulsion of bacilli and fragments of same—tuberculin R.; and finally a pure solution of the bacilli—watery extract. That this is the end we do not know. We hope not. Yet we have in this last a product whose value cannot be questioned by any one who will give it a reasonable trial. All of these products are of value, and deserve a place in the history of the combat with tuberculosis. I have had personal experience with all of these products in treatment, except tuberculin (my experience with it being confined to making the tuberculin test), and I have been surprised that their worth has not been more generally recognized.

In what manner these culture products act is still debatable. Various theories have been offered. The original explanation of Koch that tuberculin broke down the granulation tissue surrounding the tubercles and allowed the defensive forces of the body to attack the bacilli, or by this breaking-down caused the tuberculous masses to be thrown off, was never accepted by those who placed any value upon the remedy, because they considered it absolutely essential to avoid the reactions which would cause such a result.

Landgraf,* who observed the disappearance of tubercles in the choroid and also on the epiglottis under the use of tuberculin, gave it as his opinion that the action of tuberculin "is not, as was maintained, an acute necrosis and throwing off, nor a suppurating process, but an acute cheesy degeneration of the tuberculous granulation masses followed by their absorption."

Krause† says: "It is well known that tuberculin has no effect upon the actually tuberculous tissue (the tubercle with its necrotic center), but only upon the newly formed tissue, which is richly supplied with blood-vessels and surrounds the tubercle."

Biedert* says: "When the irritation (caused by the local reaction) is moderate, an increased cell growth takes place in the encapsulating wall of the tuberculous process. If the inflammation is more intense, marked exudation occurs, while in the stage of extreme inflammatory irritation, cell death, necrosis, results." Trudeau† says it acts "probably by inciting the formation of fibrous tissue."

These quotations refer to tuberculin, but since all these culture products contain perhaps the same active principle, they will apply to the others likewise. My experience with the culture products would lead me to believe that they have an action which causes absorption and removal of recent tubercles; otherwise the roughened and enfeebled respiratory notes would not become normal when healing has taken place.

The many opportunities offered for studying these remedies, where the action can be watched by the naked eye, should furnish sufficient evidence to convince the most skeptical that in culture products we have remedies which are a specific in their action upon tuberculous lesions. Even the earliest reports made, those during the fated years of 1890 and 1891, are replete with such evidence. Albrant saw the complete disappearance of a conjunctival tuberculosis; Landgraf‡ that of tuberculous processes of the choroid and epiglottis; Renvers§ cured a patient whose pharynx, epiglottis, and mucous membrane over the arytenoids were covered with ulcers; Koenigshofer and Maschke|| obtained cures in tuberculous corneal ulcerations; while it was not at all uncommon to see cases of lupus yield to its administration. The literature of recent years also bears much valuable testimony in such cases. Dr. von Ruck¶ reports many cases of laryngeal tuberculosis in which the lesions have disappeared.

Berliner Klinische Wochenschrift, 1891, p. 286.

†*Zeitschrift für Hygiene und Infectionskrankheiten*, vol. xxxiii, 1900; translated in *Journal of Tuberculosis*, vol. ii, p. 242.

Berliner Klin. Wochenschrift, 1891, p. 197.

†*Transactions of the Association of American Physicians*, 1900.

‡*Berliner Klin. Wochenschrift*, 1891, p. 285.

§*Deutsche Med. Wochenschrift*, 1891, p. 512.

||*Deutsche Med. Wochenschrift*, 1891, p. 76.

¶*Journal of Tuberculosis*, vol. i, p. 22, and Clinical Report from Winyah Sanitarium for the years 1899 and 1900.

Schmidt* insists upon the unmistakable benefit derived from tuberculin in the treatment of mild cases of laryngeal tuberculosis where surgical interference is uncalled for, and cites many cases cured by such means. Dr. Hale† reports a very interesting case of tuberculosis of the nose, in which the triangular cartilage was entirely gone. There was a large ulcerating surface discharging pus along the inner surface of the left ala of the nose, also ulcerations upon the uvula. The discharge showed tubercle bacilli. A complete cure was effected by the use of tuberculinum purificatum (von Ruck). During the past winter it was the writer's pleasure to see an ulceration of the left vocal cord in a patient who had lesions in both lungs heal under the use of the watery extract. While in many cases such as these healing has been observed, the great field for the culture products is in the treatment of pulmonary tuberculosis. It would be enough to make the names of the discoverers of these products immortal if their field of usefulness were limited to the cure of visible tuberculous infiltration and ulcers only, particularly those affecting the larynx, which complicate nearly one-fifth of all pulmonary cases, and which heretofore have almost baffled treatment. But the results obtained in the lung are no less brilliant, as they are observed by the ear of the trained diagnostician.

To make a fair test of culture products in pulmonary tuberculosis, one must, in the first place, be able to interpret the pathological condition by the physical signs, so as to know what is removable and what is not. Secondly, he must have some means of comparison. It is impossible to carry in one's mind the percussion and auscultatory signs of one case, let alone a dozen; so, if one wishes to know whether or not his cases are improving, he should make systematic examinations, say at least once a month, and record his findings upon a chart for comparison at the next examination. Thirdly, he must remember that the remedy must be used for a length of time. Slight results are often seen during the first month of treatment, and during the second the change becomes more evident. But, finally, when the recent tubercles have all disappeared, and one has to deal with dead and decaying tissue, he must not become impatient because of the time that it takes to heal such lesions.

Let us next consider whether there is any ground for claiming an advantage for culture products over the hygienic, climatic, and ordinary medical treatment of tuberculosis. To this end we will bring forth the statistics of various men who have had considerable experience in tubercular work.

In 1891 Langenbuch and Wolff* reported 99 cases treated with tuberculin, and 99 without. Of the former, 33 were cured and 40 improved; of the latter, 9 were cured and 45 improved. Of tuberculin cases, 73 per cent were improved and cured; of those treated without it, 54 per cent were improved and cured.

Goetsch in a recent report, referred to above, sums up his experience since 1891, as having treated 175 patients, and cured 125, or 71 per cent. The remaining 50 patients interrupted the cure from time to time, so the results were less favorable.

Heron† since 1890 has treated 51 cases of pulmonary tuberculosis with tuberculin. At the end of 1900, 17, or 33⅓ per cent, had been lost sight of. Of the remaining 34, 16, or 47 per cent, were well and earning their own living. Ten of these had been discharged seven years.

Krause‡ in six years has treated 27 patients, of whom 12, or 44.4 per cent, are well, and 13, or 48 per cent, are improved.

Denison§ reports 196 cases treated by culture products, including all the various products from tuberculin to watery extract. His results show an apparent recovery of 34 per cent, and a marked improvement in 42 per cent. He remarks that this was not a list of easy cases, the following complications being present: "Lupus three cases, meningitis two, Bright's disease one, pyonephritis one, tubercular kidney two, glandular cases six, joint tuberculosis four, tubercular testicle two, bladder tuberculosis three, and intestinal tuberculosis two." Of these, 49 were in the first stage; 38, second; and 109, third.

Trudeau‖ makes a comparison of the incipient cases treated at the Adirondack Sanatorium with and without tuberculin.

*Krankheiten der Oberen Luftwege, 1898.

†Journal of Tuberculosis, vol. iii, p. 239.

*Deutsche Med. Wochenschrift, 1891, p. 935.

†Paper before London Tuberculosis Congress, 1901.

‡Cited in Heron's paper before London Tuberculosis Congress, 1901.

§Journal of Tuberculosis, vol. iii, p. 111.

‖Transactions of the Association of American Physicians, 1900.

Twenty-four cases were treated with the remedy, of which 20, or 83 per cent, were apparently cured; and 113 without, of which 82, or 72 per cent, were apparently cured — a slight percentage (11 per cent) in favor of tuberculin. He then chooses 50 patients discharged as apparently cured with tuberculin since 1894, and 50 patients corresponding in lesions and time of treatment who were cured without tuberculin, to see the relative permanency of the cures. Three of those treated with tuberculin could not be traced; so three were dropped from the list treated without tuberculin. Of the remaining 47, 41 of the tuberculin-treated patients remained well, 1 had relapsed and was living, 4 had relapsed and were dead, and 1 had died of insanity. Of the 47 treated without tuberculin, 36 remained well, 6 had relapsed and were living, and 5 had relapsed and died. So we see 82 per cent of those treated with tuberculin remained well as against 72 per cent of those treated without it, a balance of 10 per cent in tuberculin's favor; or, putting it in another way, at the end of the time considered, 68 per cent of those treated with tuberculin remained well, and 52 per cent of those treated without tuberculin remained well, a balance of 16 per cent in favor of tuberculin. While the author says the cases treated with tuberculin were very carefully chosen, yet he adds in another place that "the results in the cases classed as advanced (treated with tuberculin) were proportionally somewhat more favorable." So, from this report, we may say that tuberculin does undoubtedly possess some advantages in the treatment of pulmonary tuberculosis; and since it is the permanency of the cures that is desirable, we must find in it a valuable aid in combating this great scourge.

Perhaps few men have had as much experience with culture products as Dr. von Ruck,* who has reported 1030 cases treated with them, with the following results: (I will insert 816 cases treated without culture products for comparison; as these were all treated in the same institution, the comparison is all the more valuable.)

	No. of cases.	Recovered.	Improved.
Without specific treatment...	816	12.1%	31.0%
Treated with Koch's tuberculin	379	35.5	37.5
Treated with antiphthisin and tuberculocidin	182	32.5	46.8
Treated with tuberculinum purificatum (von R.).....	166	43.4	39.2
Treated with watery extract of tubercle bacilli (von Ruck)	303	56.1	33.7

Now, let us take statistics of cases treated without the use of culture products.

Curschman,† of Leipzig, says: "Lung sanatoria give a percentage of permanent improvement which amounts to about one-fifth of all cases treated." This is by the ordinary sanatorium method.

Stubbert's‡ report of the Loomis Sanitarium for the year ending November 1, 1899, shows 85 patients treated by ordinary sanatorium methods, of whom 14 per cent were apparently cured, and 62 per cent improved. Since the opening of the institution 456 patients have been treated, with the result that 22.6 per cent have been cured and 40 per cent improved.

Flick§ reports 18 per cent as cured, 10 per cent disease arrested, and 26 per cent very much improved.

Trudeau and Baldwin‖ report that 67 per cent of truly incipient cases were cured, and 11 per cent of advanced, in a material of 300 incipient and 900 advanced cases; 73.5 per cent of incipient cases were cured in 1897 and 1898.

A report of German sanatoria¶ recently published shows, of 5986 patients treated, an apparent cure in 7.4 per cent. Then to show the permanency of results, statistics of 1878 patients are given, who have been dismissed for four years. The percentage of those able to work at the end of each year is noted. Of this number 424 patients were in the first stage of the disease, 863 in the second, and 373 in the third. The results are as follows:

Patients able to work at end of—	First stage. Per cent.	Second stage. Per cent.	Third stage. Per cent.
First year	89.1	80.3	56.5
Second year	89.1	60.7	24.1
Third year	63.7	49.2	14.3
Fourth year	44.4	16.7	0.

Among these patients the number of cures is not given; hence, since they are to be compared with results produced with culture products we will grant that all who were able to work at the end of four years were cured, which, of course, we know is too large a number. Then we have 21 per

*_Journal of Tuberculosis_, vol. i, p. 23; Clinical Report from Winyah Sanitarium for years 1899 and 1900; and THERAPEUTIC GAZETTE, May, 1896.

†Address before Berlin Congress, 1899; reported in _Journal of Tuberculosis_, vol. i, p. 90.

‡_Philadelphia Medical Journal_, Dec. 30, 1899.

§_Journal of Tuberculosis_, vol. iii, p. 116.

‖_Transactions of the Association of American Physicians_, 1900; _Albany Medical Annual_, April, 1900; _The Practitioner_, February, 1899.

¶Results of the Open Air Treatment of Consumption, Berlin, 1901.

cent cured. Counting all of the remainder, who were able to work upon dismissal as improved, we have 67 per cent.

The report of the surgeon in charge of the Army Hospital for Consumptives at Fort Bayard, N. M.,* shows 49 patients dismissed prior to August 6, 1900. Of these 4, or 8 per cent, are designated as cured; 11, or 22.4 per cent, as convalescent; 20, or 40 per cent, as improved.

Bowditch and Clapp,† of the Massachusetts State Sanitarium for Consumptives, have treated 273 cases, curing 115, or 42 per cent. In selecting these cases great care was used, 60 per cent of applicants being rejected.

The report for the Sailors' Consumptive Hospital at Fort Stanton, N. M.,‡ to June, 1900, shows 17 discharged, of whom 4, or 23.5 per cent, were apparently cured, and 13, or 76.5 per cent, improved.

A careful comparison of these results cannot help but give one a favorable impression of the culture products, particularly of the more refined culture products, in the treatment of tuberculosis. Especially is this true of the permanency of results.

While it is difficult to draw exact conclusions from a mass of statistics as given above because of the difference in classification of what is cured and improved, and because some authors have chosen only incipient cases and others have included all stages in their report, nevertheless I will arrange them in a table so that it can be seen at a glance what is being done for the tubercular patient both with and without the use of culture products. Those who are interested can look up the references and draw their own conclusions. The table comprises 12,569 cases in all; 1795 treated by culture products and 10,744 treated without.

CASES TREATED WITH CULTURE PRODUCTS.

	No. cases treated.	Apparently cured. Per cent.	Improved. Per cent.
Langenbuch and Wolff (old tuberculin)	99	33.3	40.0
Goetsch (incipient only, Koch's tuberculin)	175	71.0	29.0
Krause (Koch's tuberculin)	27	44.4	48.0
Heron (Koch's tuberculins)	34	47.0	....
Denison (Koch's tuberculin)	57	32.0	40.0
Tuberculocidin and antiphthisin (Kleis) / Tuberculinum purificatum (von Ruck)	94	33.0	40.0
Watery extract of tubercle bacilli (von Ruck)	45	40.0	49.0
Trudeau (incipient only, Koch's tuberculin)	24	83.0	....
Von Ruck (Koch's tuberculin)	379	35.5	37.5
(Antiphthisin and tuberculocidin—Klebs):			
First stage	32	81.0	19.0
Second stage	74	35.1	56.7
Third stage	76	9.0	47.3
(Purified tuberculin—von Ruck)	166	43.4	39.2
(Watery extract of tubercle bacilli—von Ruck):			
First stage	73	94.5	5.5
Second stage	117	66.6	33.3
Third stage	113	20.3	52.2
Various reports (watery extract of tubercle bacilli—von Ruck)	210	44.0	42.0

CASES TREATED WITHOUT CULTURE PRODUCTS.

	No. cases treated.	Apparently cured. Per cent.	Improved. Per cent.
Langenbuch and Wolff	99	10.0	45.0
Trudeau, first stage	300	68.0	....
Advanced stage	900	11.0	....
Bowditch (Mass. State Sanitarium):			
First stage	66	59.0	40.0
Second stage	45	22.0	64.0
Third stage	30	23.0	63.0
Clapp (Mass. State Sanitarium):			
First stage	82	64.6	34.0
Second stage	40	15.0	45.0
Third stage	10	....	30.0
Flick	...	18.0	36.0
Ft. Bayard Sanitarium	49	8.0	62.4
Ft. Stanton Sanitarium	17	23.5	76.5
von Ruck	816	12.1	31.0
Stubbert (Liberty Sanitarium):			
First stage	163	58.0	36.8
Second stage	216	9.0	56.0
Third stage	77	....	4.0
German Sanatoria	5986	7.4	80.3
German Sanatoria*	1878	21.0	68.0

*In making up these percentages I counted all who were living and able to earn a livelihood four years after dismissal from the Sanatoria as cured, as mentioned above.

The total number of cases treated and number of apparent cures, both with and without the use of culture products, are set forth in the following table for comparison:

	No. cases treated.	No. cases apparently cured.	Per cent. apparently cured.
With culture products	1795	806	44.9
Without culture products	10774	1486	13.8

So much that is adverse has been written on this subject that I will add the opinions of some of the men who have tried culture products, and know their value.

Trudeau* says: "My experience with tuberculin treatment at the Sanitarium thus far has led me to believe that, when carefully applied, in suitable cases, it has proved apparently free from danger, and that it has seemed to have some favorable influence in bringing about healing of the lesions, probably by inciting the formation of fibrous

Journal of the American Medical Association, Oct. 20, 1900, p. 1003.

†*New England Magazine.*

‡*Journal of the American Medical Association*, Oct. 20, 1900, p. 1010.

*Transactions of the Association of American Physicians, 1900.

tissue." Again:* "The injections, nevertheless, seem to have had a favorable influence in preventing the natural tendency of the disease toward relapses, which occur in many who recover under climatic and hygienic methods alone."

Krause† says: "The failures of the first tuberculin epoch are, without exception, the result of the improper methods at that time employed in the administration of the remedy. For that reason no one is justified, on the grounds of the experience of 1891, in passing adverse judgment upon the remedy. On the contrary, it is important that the remedy be extensively tried anew in accordance with the now accepted indications. For thereby entirely different results than those of 1891 will be obtained and the medical profession will be richer by one valuable remedy."

Denison‡ says: "Despite the charges of failure of this specific method of treatment, made by hasty and indiscriminating critics, it is coming more and more to be acknowledged by those physicians who are willing to test the matter, that there *is* a special and specific stimulation of tubercular living tissue, which is characteristic of a healing process."

Von Ruck§ says: "The favorable and specific action of the remedy becomes manifest not only in the general improvement with subsidence of subjective symptoms, but in a more direct manner. . . . It consists in the disappearance of tubercular lesions accessible to sight and touch, as well as of those which we recognize through percussion and auscultation. Tubercular cervical, axillary, and other accessible glands that are not caseous or fibroid, disappear under its use; infiltrations in the larnyx grow less and finally disappear; and infiltrations in the lungs revealed by slight percussion dulness, and by rough, harsh, or bronchovesicular respiration with or without circumscribed catarrh, grow perceptibly less and disappear under the treatment, without other medication. These are changes which we do not note from the application of other methods. The latter, so far as I know them, fail in directly influencing the pathological lesions, and while they are indirectly beneficial and aid in bringing about the previous condition of latency, they do not actually cure. In this view I am confirmed by the fact that while without specific medication subjective symptoms may disappear, the objective evidence continues; percussion dulness over the tubercular areas does not clear up; râles may disappear, but the abnormal respiratory sounds persist in the parts which were and still are the seat of tubercles, and the patient still reacts to the tuberculin test; whereas in patients that have been successfully treated with the remedy under consideration (watery extract of tubercle bacilli) the physical signs of recent tubercular processes disappeared entirely, and no reaction occurs to the tuberculin test up to the present time, even in the earliest cases treated. . . . In the cases that came under treatment in the early stage I have seen or heard of no relapses yet. . . . That it produces a relative degree of immunity has been shown by the animal experiment, and clinically by the marked freedom from extension of tubercular processes, and from relapses of patients who are under treatment, or have been discharged."

The question is often asked, "Can these products do harm?" Of course they can, the same as morphine, strychnine, or any other remedy. The results of 1890 and 1891 show that they can do harm; but it is the experience of all those who have made a careful study of the products, and given them a fair trial in practice, that they cannot do harm when administered carefully. My own experience has been very encouraging. I have made a careful study of my cases, and I have never seen the least harm done. On the contrary, my results have been most happy, and I do not believe that they could be duplicated by any other treatment.

The time has certainly arrived when the medical profession should give the culture products a fair trial. The opinions of men who have not tried these remedies, but who have drawn their conclusions entirely from the wrong use of tuberculin when it was first introduced, are to be compared with the opinions of those who know from experience, and who report the cases that have been treated, and show the results obtained. Culture products have the right to demand a trial by an unbiased court wherein spurious evidence will be discarded, and only positive evidence taken. All friends of these remedies will stand by the decision.

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*_The Practitioner_, February, 1899.

†_Zeitschrift für Hygiene und Infectionskrankheiten_, vol. xxxiii, 1900; translated in _Journal of Tuberculosis_, vol. ii, p. 255.

‡_Journal of Tuberculosis_, vol. iii, p. 112.

§Clinical Report of the Winyah Sanitarium of Asheville, N. C., for years 1899 and 1900.

It must be remembered, however, that the friends of culture products should not relax their efforts in other lines. It has been said by the critics of men employing these remedies that they use hygienic, dietetic, and climatic treatment as well. So they do; they would be foolish if they did not. The surgeon combines all of these with his use of the knife, and it is considered praiseworthy in him. So those who recognize the value of culture products find their results are much better when their cases are properly handled, and they always endeavor to guide the entire life of their patients. It should be considered as malpractice to simply inject culture products, and leave the patient to guide his own life. With reference to this point Professor Koch is reported to have said at the Tuberculosis Congress held in London in 1901* that he did not wish anybody to get the idea that he himself thought there could be any antagonism between treatment by tuberculin and the outdoor treatment in or out of sanatoria. He has always insisted that the two should go on together.

A careful review of this subject, together with practical experience in the use of culture products, leads me to the following conclusions:

1. Culture products *do* have a specific action upon tuberculous foci.

2. That this has not been recognized is due to the early unfortunate experience with tuberculin: (*a*) When it was used in too large and too frequent doses; (*b*) when it was employed in unsuitable cases; (*c*) when it was held responsible for all post-mortem findings.

3. The field of usefulness for culture products is where recent tubercles are found, and this especially in incipient cases.

4. If used in advanced cases, culture products will help remove areas of recent extensions, but must not be expected to remove dead, decaying, or newly formed tissue.

5. Where culture products are used, they should be reënforced by every means at command. Every phase of the patient's health should be cared for, and the proper hygienic and dietetic measures prescribed.

6. Where the case is managed properly and culture products are used, the proportion of cures is greater than when culture products are not used.

7. Culture products produce an immunity, which protects the patient from relapses; hence, make a permanent cure more often than hygienic and climatic treatment alone, which fact of itself should be enough to warrant their use in all suitable cases.

*Reported in *British Medical Journal*, July 27, 1901, p. 214.

FOUR UNIQUE CASES OF APPENDICITIS.

By Frank W. Garber, M.D.,
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The subject of appendicitis has become somewhat hackneyed, and my only excuse for presenting the following cases is that they exhibit some features not commonly met. To the general practitioner no case brings deeper concern than one of appendicitis. He sees patients suffering from this disease go on to complete and often permanent recovery without the aid of the knife, and again he sees those who present symptoms apparently identical develop conditions which surgery alone can relieve, and which are often beyond its aid when its good offices are invoked. To decide when to operate and always to be right in one's conclusions demands a niceness of judgment which is denied most practitioners. One may make a fixed rule to operate as soon as the diagnosis is made or after a certain time has elapsed without signs of improvement, but such a rule must subject a patient now and then to a needless operation. I confess, however, that I have never yet regretted a seasonable operation, while I have several times regretted a procrastination, either of my own choosing or enforced by the prejudice of patients and friends to such procedure.

The first case which I wish to bring to notice is that of a boy of five, whose previous history had been without pathological incident. He was taken suddenly with pain in the abdomen which was referred to the umbilical region. There was vomiting and some looseness of the bowels. The face was somewhat drawn, and had the expression of one suffering pain below the diaphragm. There was at the time of my first call no tenderness over the appendix at the pathognomonic point. There was a slight elevation of temperature. The picture was very suggestive of appendicitis, but I could not determine positively. The next day there was marked improvement, and the child's parents sent me word that it would not be necessary to see him. Three

days later the mother called at my office for medicine, stating that the boy was not doing well, and that he still complained of pain. Fearing that the trouble was appendiceal, I suggested that I see the boy instead of sending medicine. I found the picture of appendicitis had grown more distinct during my absence, this being the fifth day of the disease. The abdomen had become somewhat tympanitic. The child had more fever. The face was paler. The bowels were moving frequently, and the evacuation was an almost clear and glary mucus, a feature I had before observed in those cases of appendiceal abscess where the abscess is situated low in the pelvis. There was difficult urination. There was little or no tenderness over McBurney's point. Under chloroform and by rectal bimanual palpation I was able to outline a small tumor lying low in the pelvis on the right and near the bladder. Immediate operation was advised and accepted. An oblique incision over the mass was made, beginning just above Poupart's ligament and extending upward and outward about two and a half inches. Close to the bladder, and deep in the pelvis, a small and fluctuating tumor was found connecting with the appendix above. After walling off carefully, the mass was incised, and about two ounces of thin and not very offensive pus was evacuated. The mass was adherent to the bladder, into which it soon would have spontaneously evacuated, as the bladder wall was so thin as to pout into the abscess cavity after it had been wiped out. After mopping the pus cavity thoroughly, it was packed with iodoform gauze. No attempt was made to remove the appendix.

Recovery from the operation was without incident, but on the third day following it the little patient developed a well marked case of measles. Under the strain of the frequent coughing accompanying his newly developed trouble the already weakened wall of the bladder gave way, and for over a week he passed all his urine through the fistula thus formed. This necessitated frequent changes of dressing and added greatly to his distress. The little patient, however, met all these trials with fine stoicism and an obedience to nurses which was rewarded by final and complete recovery. In four weeks from the time of operation the patient was discharged.

The second case was a girl of eight, with no history of previous abdominal trouble. The attack was abruptly ushered in with much pain, vomiting, and free movements of the bowels. The distress, as in the previous case, was referred to the umbilical region. The parents were not alarmed over the condition, but the pain and vomiting continuing, it was thought advisable to seek medical aid, which was done two days after the onset of the trouble. The child was found to be pale, with drawn and anxious features. Perspiration was not marked. There was a temperature of 101°, with a pulse of 120. There was not much distention of the abdomen, but it was tender and resistant on the right, with the most acute tenderness over McBurney's point. The right side of the abdomen was more elevated than the left. Respiration was 42 and entirely thoracic. The lungs were not affected. A diagnosis of appendicitis with a probable peritonitis was made. Operation was advised, but the parents refused to consent. The patient was then given a saline cathartic, which acted promptly and repeatedly. The pain continued with vomiting at intervals for the next two days. The abdomen became slightly more distended, though less resistant. The general tenderness remained, with the most marked point over the appendix. There was a morning temperature of 102°, and an evening one of 101°. The patient showed signs of gradual failure. The eyes became more sunken and the cheeks more hollow. The skin took on a bluish pallor. The pulse remained constantly at 120, with respiration at 36 to 42. There was no cough, and examination of the lungs showed no cause there for the rapid breathing, which was attributed to a fixation of the abdominal muscles due to peritonitis. On the fourth day there was nosebleed. The bowels continued loose, and that, together with nosebleed and the appearance of the tongue, raised a question of typhoid fever. The general appearance, however, did not bear out this diagnosis. The picture was one of septic peritonitis. On the fifth day of the patient's illness it became evident to the parents that the child was rapidly failing, and an operation was requested. Little hope was given that it would be remedial. As offering the only possible hope for recovery it was done. A perforated adherent appendix was found, while free in the abdominal cavities was a pint or more of pus not particularly offensive in odor. This was as thoroughly wiped out as could be, and the abdominal cavity

was flushed with hot saline solution. Gauze was carried between the folds of the intestines, and a counter-opening was made through the quadratus lumborum. Patient died nine hours after operation. A noticeable feature of the last thirty-eight hours of the patient's illness was the scant secretion of urine. On the day preceding her death, after failing to urinate for eighteen hours, the patient was catheterized, and only about three ounces of urine was drawn. The urethra was found to be exceedingly sensitive, with a dark-red and pouting meatus.

The third case, though not chronologically sequent, is here introduced because of its peculiar relationship to the foregoing one. Five months after the death of the patient whose history has just been given, a brother ten years of age was taken with violent pain in the hypogastrium, referred largely to the region of the bladder. There was difficult and painful urination. Vomiting also occurred. The patient was seen within twenty-four hours of the onset of the trouble. There was at the first examination some tenderness over the bladder and pain on urination. The region of the appendix was not noticeably tender, nor resistant to pressure. Vomiting had ceased and the bowels had moved. There was still pain at intervals. The temperature was 101° and the pulse 106. Appendicitis was suspected, but there was some evidence that the trouble might be confined to the bladder. During the twenty-four hours following the abdomen became somewhat distended, with such general tenderness as to suggest peritonitis. Examined under chloroform, no tumor nor inflammatory hardness could be detected either by rectum or by abdominal palpations. During this time the bowels had moved several times, vomiting had returned, and there had been great pain at intervals. This pain was referred to the region of the bladder. So far as could be determined there was no tendency toward a walling off of the septic area. The night of the third day of the disease was marked by much pain. The bowels become obstipated, and there was vomiting of bilious matter. The abdomen became rapidly distended and painful during the next twenty-four hours. Vomiting was frequent, and there was still no movement of the bowels. The pulse ran up to 120 and was feeble. The temperature was 103°. There was sweating.

Consultation was had, at which the advisability of operation was discussed, but it was not thought best to operate under the conditions existing. It was agreed that in the presence of our inability to get a movement of the bowels we could scarcely hope for better results after an operation, and that unless they could be kept open nothing would be gained. The patient was put upon 1-40 grain of strychnine every three hours with salines and calomels. Improvement was soon manifest, so that by the end of the next thirty-six hours the temperature had dropped to normal and the pulse to 96. There was no more sweating, and urination was without pain. The abdomen became less distended; the area of tenderness grew smaller, and seemed to retreat to the ileocæcal region. This whole region, however, remained very tender, and there was marked muscular resistance to pressure. Rectal examination still failed to disclose any inflammatory brawniness. The next forty-eight hours were marked by apparent improvement. While appetite did not return vomiting had entirely ceased. The abdomen had steadily grown less tender. The patient moved about his bed with more ease. He slept well. Tenderness continued.

On the seventh day from the onset of the disease, and at a time when the patient seemed convalescent, the temperature suddenly went up to 102° and the pulse to 118. There was still some tenderness on the right side, but the area had seemingly grown less. There was no tumor indicating an appendiceal abscess, but there was a slowed cutaneous circulation in that region with the faintest suggestion of edema of the overlying tissue. The subcutaneous veins of the groin seemed abnormally full. In view of the sudden turn the case had taken it was thought advisable to operate, which was done at once. Over a pint of fetid pus was evacuated. The abscess was apparently walled off. The peritoneum at the site of the operation was dark, almost necrotic looking, and covered with a layer of plastic exudate. A counter-opening was made through the quadratus lumborum low down on the side, and the abdominal incision was closed. The patient suffered no shock from the operation. During the first twenty-four hours following the operation there was much improvement. The bowels moved spontaneously several times. There was no vomiting. About thirty-six hours after the operation he became very restless and vomited. There was, however, no distention of the abdomen, and he passed flatus. He

ceased to urinate, the pulse became rapid. Finally delirium with great muscular activity came on. The patient seemed in great pain, the vomiting increased, although it was not bilious in character at first. The bowels became blocked to fecal matter, though flatus continued to pass. The delirium finally gave way to profound unconsciousness, from which the patient could not be roused. The entire left side became paralyzed. The pupils were widely dilated and insensible to light. Cerebral embolism and death closed the scene forty-eight hours after the operation. The abdomen remained flat, and there is every reason to believe that the patient would have recovered had he not been taken away by one of the not very frequent accidents occurring in septic cases.

This case illustrates very nicely the difficulties besetting a general practitioner in this class of trouble. I am almost willing to accuse myself of temporizing with this patient, and yet I do not know how I could have done differently, unless I should arbitrarily determine to operate at once in all cases.

The fourth case was that of a girl of sixteen who had given no history of previous trouble. She had, however, it was claimed by her friends, not seemed quite well for some time preceding this illness. Her first intimation of trouble was on July 2, 1898. She then noticed some pain in her right side which was attributed to a strain. The pain increased, but the patient kept about until the next day. Vomiting appeared, but she did not feel very sick and went reluctantly to bed. On the evening of the second day medical advice was sought. It was then evident what the trouble was. There was tenderness over the appendix. The face was pale and anxious. The pulse was 90, and the temperature 102°. Over the site of the appendix was a ridge, easily felt through the thin abdominal wall, extending obliquely upward and downward from the pathognomonic point, an inch and a half in either direction, and the width of a finger. It seemed like a fold of omentum, which it probably was, and was nature's wall of defense against the septic enemy. A diagnosis of appendicitis was made and the propriety of an operation discussed, but in view of the intense prejudice on the part of the parents to measures of this sort, it was deemed advisable to watch and wait. By July 5 the tumor, caused by inflammatory exudate, pus, etc., had rapidly increased in size, and it was believed that operative measures should be resorted to at once. Counsel was called on the evening of this day, and after a careful consideration of the case it was decided to operate on the following morning unless improvement appeared. Great anxiety was felt over delay, however, and we were shown during the night how dangerous it is to temporize with these cases. The pulse rapidly increased in frequency, reaching 120. The patient became very restless and was in much pain. The tumor over the appendix seemed to increase almost hourly. At 3 A.M. of July 6 the pain became so severe as to cause the patient to roll about the bed in agony. She was quieted by a hypodermic injection of morphine ¾ grain.

Immediate preparations for operation were made. While these preparations were going on the abscess burst into the abdominal cavity, and the tumor grew less in size. Operation was not done until 8 A.M., by which time there were evidences of general peritonitis. The abdomen was opened over the site of the appendix. Pus was found in the free abdominal cavity, in the pelvic cavity, and bathing the tube and ovary on the right. There was an acute edematous ovaritis with a distended tube. It seemed probable that a portion of the pus was from the right tube and ovary, which were removed, but a careful after-examination led me to the belief that they ought possibly to have been spared. All discoverable septic matter was carefully wiped out, and then with an opening into the vagina through the cul-de-sac the abdomen was thoroughly flushed with a hot saline solution. Thorough drainage was established and the abdominal wound partially closed. The patient rallied nicely from the operation. There was some vomiting during the first twenty-four hours due to the anesthetic. The bowels were moved freely by the end of the second day, and the patient was apparently convalescent. Pulse and temperature dropped. The appetite returned, and the abdomen became perfectly flat. This improvement continued until July 12, six days following the operation, when there was a slight rise of temperature and pus again appeared at the site of the appendiceal abscess. This increased in amount for the next few days, and some tenderness appeared over the left ovary. The pulse was rapid, being most of the time 120, while the temperature ranged from 99¾° to 101°. The appetite was good, and the bowels continued to move freely. Evidences

of peritonitis limited to the left side then appeared. There was bilious vomiting, a tender and distended abdomen, increased temperature, and more rapid pulse. It was thought the patient must die. On July 19, while flushing the abscess cavity, a large fecal stone with the necrotic appendix was washed out with the stream. Improvement followed this, and it was thought that convalescence was at last established. This hope was, however, short-lived. The abdomen again became distended and sensitive. Vomiting reappeared. It was thought that perhaps the cavity at the site of the appendiceal abscess did not drain sufficiently, and a counter-opening in the quadratus lumborum was made. The effect of this procedure was not immediately evident. The patient was suffering from profound sepsis. Naturally by this time she had wasted to a skeleton. The pulse was 130 to 140. She perspired freely. She was very anemic. Again and again the abdomen, the chest, and the pelvis were explored for some sign of a focus of infection outside the original one, which was now freely drained and discharged but little. The left side from the crest of the ilium to the twelfth rib, and extending almost to the median line, was tender, but there was no dulness on percussion nor anything to indicate the presence of an accumulation of septic material at this point. Owing to the profoundly depressed condition of the patient it was thought inadvisable to make any exploratory opening.

On July 23 it was thought the patient would not live twenty-four hours. The pulse ran up to 150 and the temperature to 104°, with frequent vomiting of bilious matter. Strychnine in 1-30 grain doses was ordered every three hours. Owing to a mistake of an attendant it was given hourly for twelve hours. This seemed to be the turning point. I have no doubt that the large doses of strychnine so frequently repeated tided the patient over what might have been a fatal crisis. The patient was now put on guaiacol, strychnine, arsenic, and quinine, which she continued to take until convalescence was fully established. There was a slight relapse on August 2, but it lasted only forty-eight hours. From this time on improvement, though slow, was steadily maintained. More or less fever continued through August, but by September 1 the temperature had become about normal. The appetite improved rapidly, and under such general tonic treatment as in her thoroughly debilitated condition was indicated she gained in strength until September 25, when she was able to ride to her home in the country, five miles distant. There she steadily recovered her former strength and is to-day quite well, though having occasionally some digestive trouble which yields to ordinary care in diet. She did not menstruate for over a year following her illness, though losing but one ovary. The amenorrhea appeared to me to be conservative, and I thought menstruation would return when the bodily powers were fully restored.

Let us summarize some of the points brought out by these cases.

Acute appendicitis is sudden in its onset; it is accompanied by severe pain. This pain is rarely referred to the appendix, but more often to the umbilical region. It may be referred to the epigastrium and appear as a sense of weight there. The pain is frequently referred to the region of the bladder, and difficulty in urination following the sudden onset of abdominal pain should always raise the question of appendicitis. There is almost always vomiting at the onset, and there may be looseness of the bowels. There is facial pallor and a peculiarly anxious look even in a child.

A discharge of mucus, clear as the white of an egg, from the rectum is a frequent symptom of appendiceal abscess lying low in the pelvis. In all doubtful cases an examination under chloroform should be made. This should include a bimanual rectal exploration.

For those practitioners who depend on nature to effect a cure until they are sure an appendiceal abscess has formed, it becomes an important matter to determine when that stage is reached. This is often difficult. In general, however, if there is persistent hectic with sweating, tumor, continued tenderness, and a slight tendency to edema of the overlying tissues, together with a certain slowness of the cutaneous circulation, it is pretty nearly always true that pus exists about the appendix. These cases do well after simple evacuation of the pus, though some operators attempt to remove the appendix as well.

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*CLEANLINESS, THE GREAT SECRET OF SURGICAL SUCCESS.**

By Carl Beck, M.D.,
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It may safely be maintained that in nothing have greater strides been taken during the last few decades than in surgery. During the middle ages it was so little respected that it was a rule among the German Master-singers not to accept an apprentice or disciple until he could prove that he was "fourteen years of age, of decent parentage, and particularly not related to any flayer, hangman, surgeon, or similar individual." But nowadays surgery counts princes of royal blood among its most enthusiastic followers.

Miraculous indeed appear the feats of surgery to-day. And to what in particular, it is well to ask, is this phenomenal change, effectuated in such a short space of time, due—this change which brought more progress in the three decades than thirty centuries had brought before? In the first place, we may answer, to the great discovery of anesthesia. We may say with no little pride that the entire civilized world owes an untold debt of gratitude to the United States of America for the benefit of many important inventions and discoveries. However great the best of these may be, none can equal in importance to suffering humanity the discovery in 1846 by Dr. Morton, of Boston, of the anesthetic properties of sulphuric ether, which enables surgeons to perform operations the possibilities of which their ancestors could hardly dream.

Still the ultimate success of these miraculous operations, performed by great masters, was utterly unsatisfactory. A dark fate still hovered over the wounded, until the discovery of the antiseptic treatment by Sir Joseph Lister gave us the weapon against one of the most terrific scourges of mankind, wound infection. Besides these two great factors, anesthesia and antisepsis, surgery owes its wonderful achievements to a great extent to its modern development on the firm basis of the natural sciences. Helmholtz said: "The old lady, Medicine, can hardly be recognized any more, so young and healthy has she become in the spring of youth of the natural sciences."

Artificial hemostasis, which enables the modern surgeon to perform the most extensive operations with scarcely the loss of a drop of blood, and the Roentgen rays, which make the whole body transparent, throwing light into its remotest corners, have also taken a large part in the recent advance of surgery.

It would exceed the boundaries of this subject should I attempt to go into the details of all these wonderful acquisitions. So we will only consider the most important of them all, antisepsis, the method of destroying organic germs, which are recognized as the cause of wound disturbances. To appreciate the significance of this discovery fully, it will be well to look back upon the past; and we do not need to go back far. What an immense change since only a few decades ago the great Russian surgeon Pirogoff dared to write a book on "Luck in Surgery," sadly and resignedly admitting the futility of his own knowledge and skill.

In the clinic of one of the greatest surgeons of thirty years ago, eighty per cent of all wounds were attacked by hospital gangrene. Erysipelas, known to the younger medical generation merely by hearsay, was so frequent that when a poor wounded individual did exceptionally not become erysipelatous, he was looked upon with a degree of suspicion. If a surgeon had then expressed the hope of seeing wounds heal without suppuration, he would undoubtedly have been declared crazy.

The various forms of blood-poisoning, purulent edema, traumatic tetanus, pyemia, and septicemia were as common as a scab on the skull of a Ludlow street Arab. The death-rate after amputation showed the enormous percentage of ninety.

When a student I knew an old German Medicinalrath, who had a peculiar predilection for showing specimens from amputations and resections he had performed. When one of us curiously disposed novices had the impertinence to ask him how the patients did whom he had graced with his skill, he said with unutterable contempt: "You do not mean to expect that the poor fellows could survive such an operation?"

Fortunately the time has passed now where luck is the determining factor in surgery. If proper precautions are taken the surgeon opens the skull, the chest, the abdomen, and the joints with absolute confidence that ill consequences are impossible. The old saying of the great French surgeon

*Read before the Legal Aid Society of New York City, May 17, 1901.

Ambroise Paré, "Je vous ai operé, Dieu vous guerira" ("I have operated on you, God will heal you"), has lost its meaning, so significant of the powerlessness of this matchless surgeon, who was more brilliant in his technique than any operator now alive. When nowadays the abdominal wall is closed after an uncomplicated laparotomy, the fate of the patient is determined. If the surgeon was clean, his patient will get well; if he was not, he will most probably succumb, no matter what will be done for him afterward. So the surgeon only, and not the luck, is responsible for the final outcome.

To use the fitting expression of the surgeon-poet Volkmann, the surgeon, after having performed an operation, was formerly like a husbandman who, having sown his field, waits with resignation for what the harvest may bring, fully conscious of his own impotency against the elemental powers, which might pour on him rain, hurricane, and hailstorm. Now he is no longer dependent; he is a craftsman from whom one expects a successful job.

It is astonishing that the basis of this enormous and well justifiable surgical self-confidence is simple methodical cleanliness. And most astonishing it is, too, that millenniums passed before science came down to this simple perception. It is true that once in a while, even long before the Christian era, the indefinite conception of antiseptic principles sprang up. But it is only since Lister, standing on the shoulders of Pasteur, showed us that the infection of wounds, like fermentation, is dependent on the entrance and multiplication of germs, generally called microbes or bacteria, that we can speak of antisepsis. Lister very naturally concluded that if the germs cause the infection, their destruction must render infection impossible. He tried this by washing all wounds, and the material coming into contact with the wound, with carbolic acid. At first it had also been thought that the dissemination of the germs was caused through the air. But the investigations of the youngest medical daughter, bacteriology, under the auspices of Robert Koch, soon showed that the air was by no means a congenial resting place for germs, especially not for wound germs, and that they are nearly invariably transmitted by contact. The wound germs are quite different from the aerial germs causing ordinary putrefaction, the latter being innocuous mold or yeast fungi not causing disease in men at all.

Fortunately all the germs dangerous to the human body have a tendency to settle. Consequently they are found particularly in the dust on the floors, the walls, the curtains, or the picture-frames of a room; and unless they are immoderately stirred up the germ-containing dust will not come into contact with the wound of a patient occupying such room. So cleanliness is of the greatest importance—in other words, preventing the accumulation of dust and of avoiding in the sick-room such objects as curtains, carpets, pictures, pedestals, ornaments, etc., in the corners and crevices of which dust will easily settle.

As they settle on the floor or wall of a room, the germs adhere to the clothing, skin, hair, finger-nails, etc., of the human body. So a wound, which means a separation of the skin, must necessarily become infected by the germs settling on the separated skin-area. The instrument inflicting the wound also represents an object upon which germs will easily settle. This fact shows the necessity of destroying the germs which adhere to the skin of the wounded patient as well as those of the instrument, and last, but not least, the hands of the surgeon who treats the wound. Rendering the instruments germ-free, or as we term it technically, sterilizing them, is a very simple procedure. They are boiled. The most virulent germs are destroyed as soon as they are put into boiling water. Nearly all inorganic substances, as for instance sponges, sewing material like silk thread, dressings, etc., can thus easily, quickly, and cheaply be sterilized. Organic substances, like our own hands, for instance, unfortunately forbid sterilization in this simple and powerful manner, and require a more complicated cleansing.

We know that our internal tissues are usually free from germs; but the surface of our body is impregnated with legions of germs, from the common mold fungi to the highly virulent varieties. There are all the conditions favorable for their development. Besides the equable temperature of the body favoring their growth, they find a rich soil in the secretion of the glands of the skin, in the dead cells of the epidermis, and in the mucous membranes of the cavities of the body.

It had been hoped, and it is still claimed

by reckless manufacturers of disinfecting chemicals, that nothing would be easier than killing such germs by simply dipping the respective part of the body, say for instance the hand, into a strong solution of carbolic acid or a similar disinfecting medium. But this is a great error. An ocean of carbolic acid will not have the slightest effect upon the protecting coverings of the nests of germs in the human skin. There they are embedded in greasy material, in cracks and crevices, where dead organic matter always abounds. It is again simple cleanliness which proves to be a more powerful and reliable germ-destroyer. Much warm water and soap dissolve the dirt which shelters the germs, and scrubbing with a brush removes them. Germs are also apt to lodge in the natural fat of the skin, and they will also resist the most powerful chemical disinfectants. But common alcohol dissolves the fat, thereby depriving them of the condition essential to their life.

After all these procedures are well carried out, the skin is nearly sterile, and it remains questionable whether an antiseptic or disinfectant is still necessary.

Similar principles apply to the so-called acute infectious diseases. The public is well aware of the necessity of disinfection, when there is for instance a case of diphtheria. The mother, anxious for her darlings, studies the long list of disinfectants and spreads them lavishly. She tells the attending physician, when he asks for soap and water, with no little pride, that she put a few drops of carbolic acid in the wash-basin in order to give the doctor a real "thorough" disinfection. If she would wash her hands thoroughly in the same manner as advised for the surgeon, before he performs an operation, and repeat it as often as she came in contact with the patient, avoiding also to touch her own body with her hands before she had washed again, she would not need to fear bacteria for herself or for others.

To "disinfect the air" in the sick-room and to kill imaginary germs, antiseptics are generated day and night; and the more terrible the odor of such "germ-destroyers" is, the more confidence is placed in them. Streams of disinfectants are poured through the water-closets to prevent a diphtheria settlement. But bacteria, embedded in filth which adheres to the surface of a closet-pipe, will not be killed by disinfectants, no matter what the quality or quantity may be. Just as in the question of cleaning the skin, it is the mechanical and not the chemical process which answers the purpose. Remove the bacterial shelter—that is, the filth—and the bacteria will go away with it. It is evident that this end is accomplished best by a wash-apparatus, which washes away automatically whatever may become a favorable soil for any germ. If in spite of the washing filth should adhere to the surface, it must be scrubbed off. No germ can develop on a clean china surface!

The same views hold good in the much-disputed telephone question. No pathogenic germ develops in the mouthpiece of the telephone apparatus.

Now, to return to strictly surgical preparations, if a surgeon with sterilized hands incises the germ-free skin of a patient with a sterilized instrument, and if the dressing material as well as any other object coming into contact with the wound is absolutely sterile, there is no possibility of an infection. Even the peritoneum, the membrane most dreaded by the surgeon, will stand the most pitiless handling of an unexperienced surgeon if only the surgeon will do the peritoneum the favor to be absolutely clean, or technically "sterile." The modern surgical technique is thus of a pronounced preventive character.

At the time Lister made his first practical experiments, the knowledge of the atmospheric germs then being very limited, the foe was allowed entrance to the wound to a certain extent, and was fought then in the wound itself with the aid of carbolic acid. So germ infection, in other words sepsis, was fought by a disinfecting method, called *antisepsis*. Nowadays we prevent the germ infection sepsis by keeping the germs off by minute cleanliness, *before* we perform an operation. The operation being done in a non-septic field, the term *asepsis* has been chosen for this ideal procedure. The American nation is acknowledged all over the world as the cleanest. It is therefore not astonishing that asepsis has been higher appreciated here than anywhere else, and I venture to predict that this country is destined more than any other nation to develop asepsis to its fullest perfection.

It is safe to say that in many respects the United States have fulfilled a noble mission in this direction for many years, a task not to be underestimated. There are a number of signs indicating that this characteristic

sense for cleanliness has, like some other American virtues, influenced other countries indirectly. What a change, for instance, is observed in emigrants who come from semibarbarous districts, where even an annual bath is regarded as an extravagant and foolish luxury. They sometimes carry all imaginable varieties of mother earth, especially on those surfaces of the body not covered by clothing. When they scratch themselves for obvious reasons they become self-inoculated with the germs harbored in their well cultivated filth. As bacteriological investigations prove, all sorts of pus-producing germs are found in their skin; so it is only too natural that the skin surface of such individuals is covered with boils and swollen glands. The example of their new fellow citizens soon teaches them a good lesson, and in the second generation the sense of cleanliness is generally very well developed.

Of course, there will always be some who are never able to be thoroughly clean, no matter how often they are admonished. Originally, it is true, such virtues arise more from a trait of character than from education. Some, so to say, are born clean. Still education does a great deal. The youngster always reflects the mother more or less. If he is clean, there is little doubt that his mother took pains in teaching him how to clean his hair, his finger-nails, the sole of his foot, his mouth, and his clothing. And external cleanliness often is the reflection of the purity of character.

And most important is this virtue in the members of the medical profession. A physician whose exterior is not absolutely clean should be invariably rejected by his patient. If his finger-nails are not scrupulously clean, the same hand which should be destined to destroy disease is apt to produce it.

Fortunately, there is among the American people a natural sense for asepsis, similar to that in the old Roman sister. As alluded to before, aseptic principles had been carried out more or less conscientiously many centuries ago. We may just be reminded of the frequent washings by the Hebrews, a religious rite ordained by Moses, who doubtless was one of the greatest judges of human requirements.

Much of the admirable knowledge of the great Hippocratic era was lost during twenty-three centuries. Is it not astonishing that the father of medicine laid great stress upon frequently washing the patient with warm water before performing an operation? Does not this extraordinary cleanliness of Hippocrates appear like the dawn of aseptic principles? Is it not an explanation of the success of operations so signally performed at that period that some are inclined to doubt the authenticity of the records? Brilliant surgical names were delivered from that era to posterity. Most of them were of Greek origin, the free Roman citizens but exceptionally taking an active interest in the healing art.

A slight indication of what must have been lost of the immense knowledge of the school of Kos, and of how advanced Roman surgery must have been, may be gained by visiting the "house of the surgeon" at Pompeii. The streams of water constantly flowing through the streets of Roman cities were certainly apt to remove germs mechanically. Furthermore, it seems to me that the unusually large number of small wells in the "house of the surgeon" suggests at least some vague knowledge of the principles of asepsis.

At a visit to this most interesting place it struck me that in some respects the present age is but little advanced when compared with the medical civilization of many centuries ago. Why should not the ancient surgeon, with his fine art of diagnosis and with his most powerful weapon, "cleanliness," have obtained better results than the surgeon of not many years ago, who went directly from the autopsy-room, after having washed his hands superficially in some questionable fluid, to the operating-room, repeating his anatomical masterpiece on the living subject, which was thus frequently enough made another specimen for the autopsy-room?

The instruments excavated at Herculaneum and at Pompeii, and now exhibited in the Vatican at Rome and in the Museo Borbonico at Naples, are pretty much the same as are used nowadays. They are of the most admirable perfection. The cutting instruments are made of steel, the others of bronze. They could very easily be cleaned, and are invariably to be regarded aseptic.

It is astonishing that while the public schools impress their disciples with the great importance of the distance from the moon and its mythical surface, the far greater importance of asepsis fails to be systematically dealt with. What a valuable support would the knowledge of aseptic

principles render the surgeon in the case of emergency! Whatever a surgeon needs can be had everywhere nowadays; in fact, there is hardly an excuse for a surgeon to claim that "the poor circumstances of the patient's surroundings did not permit aseptic precautions." Water, fire, and boiling-pots can everywhere be obtained, so that instruments, silk or common thread, and dressings can be sterilized. If no dressing material be at hand, old linen may be substituted after it is boiled. It is also well to know that freshly washed and ironed linen is generally sterile, and may be substituted for the gauze.

Many lives could be saved by the knowledge of these simple things. Many persons die from the consequence of having cut their corns with an unclean knife or from opening a small abscess with a filthy pin. Had they been told that the parts should be washed carefully and that the razor should have been boiled for a few seconds, they would not have succumbed to the most fell of all destroyers—ignorance.

It is a wide-spread custom to wash wounds with water without being scrupulous as to its source. It may be from a muddy pool or from a dirty vessel, and be spread over the wound to "render it clean." To soothe surgical conscience carbolic acid is sometimes added. Thousands have died from the ignorant use of carbolic acid, and many more mourn the loss of one or more fingers from the reckless use of this poisonous drug, the sale of which should be prohibited by law. *Clean, boiled water is innocuous and answers the purpose admirably.*

The public should also be instructed that wounds must be disturbed as little as possible, and that only when there is considerable hemorrhage should the bleeding region be pressed for about five minutes, or until the arrival of the surgeon, with a linen compress or a towel, previously immersed in boiling water. Many more wounded die from the infection carried into their body by the first help for the purpose of checking the bleeding than by the bleeding itself.

So we see how the commands of cleanliness penetrate our most intimate customs and relations directly as well as indirectly. Cleanliness is not only a nice thing *per se*, it is a necessity, and as to longevity it is beyond doubt that it is the cleanest who has the best chances in the cruel struggle for existence.

*THE THERAPEUTIC VALUE OF ADRENALIN.**

By John J. Kyle, M.D.,

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A great deal has already been written relative to adrenalin chloride, the wonderful vasoconstrictor, from which one is led to conclude that there is probably greater use for adrenalin in rhinology than in any other branch of medicine.

Suprarenal gland on account of its instability is, in many respects, very unsatisfactory in solution. However, in the form of an unguent I find conspicuous use for it at the present time. Aqueous extracts of suprarenal gland being unstable and so unsatisfactory, great efforts have been made by several investigators to isolate the active principle of the gland, with the result that adrenalin was given to the profession by Dr. Jokichi Takamine.

Adrenalin is a fine crystalline powder, yellowish-white in color, slightly alkaline in reaction, slightly soluble in water and insoluble in hydrocarbon oils. The crystallized powder dissolved in normal salt solution, 1:1000, with 0.5-per cent chloretone, is supplied ready for immediate use. In this form it may be directly applied to the mucous membrane of the nose, throat, or eye; the ischemic effect is practically instantaneous, lasting from fifteen minutes to one hour. Its action upon the ocular conjunctiva is probably the most prolonged.

There seems to be a wide discrepancy of opinion among operators relative to the after-effect of adrenalin upon the blood-supply to the affected parts. Some claim that there is a predisposition to secondary hemorrhage after operation.

Dudley Reynolds makes a bold statement that adrenalin lessens rather than encourages secondary hemorrhage. My opinion is that the retractile effect of adrenalin is followed by subsequent dilatation of the blood-vessels, though this is often slight.

In operations for strabismus, where cold compresses are immediately applied. the subsequent hemorrhage is lessened, and return, by absorption, to the normal coloring is much quicker. Relative to the strength of the solution necessary to produce ischemia of the mucous membrane, Takamine found that a drop of a solution of 1:10,000

was sufficient to blanch the conjunctiva within one minute. The effect lasted for a very short time only. The weakest solution probably in use is 1:10,000, which, when dropped into the eye or sprayed into the nose, at once produces a blanching of the mucous membrane and relaxation of any turgescence. The lasting effect of the drug is in proportion to the strength of the solution; therefore for operation upon the structure of the eye, removal of hypertrophies of the turbinates and spurs of the septum, as a local application to the drum of the ear in acute myringitis, or acute otitis media, in the treatment of chronic trachoma, or mucopurulent conjunctivitis, a solution of 1:1000 is preferable.

Fortunately there is no perceptible cerebral effect following the employment of adrenalin solutions and no local irritation from its prolonged use; consequently it may be applied frequently, and in any ordinary quantity.

Many reports are current showing the advantage of the administration internally of powdered suprarenal gland in hay-fever, Addison's disease, and especially in diabetes insipidus and neurasthenia. The field for investigation of the value of adrenalin as an internal remedy is therefore open. It is reasonable to presume, however, that as in the case of the alkaloids of opium, coca, coffee, etc., the active principle of the gland will be the agent most to be relied upon.

As a spray in acute coryza, acute laryngitis, or acute Eustachian salpingitis, the usefulness of adrenalin must be quite apparent, since it is especially indicated in these diseases.

Its usefulness as a collyrium in painful serous iritis, as an adjunct to atropine and cocaine, is a matter for further investigation; so far, in a limited number of cases, its value was well demonstrated. In one case of double iritis, with glaucomatous symptoms, adrenalin was used with satisfaction. Dodds, of Chicago, reports a case of acute inflammatory glaucoma in which he could not have operated without the use of adrenalin. Dudley Reynolds reports good results from an injection of a few drops of the solution through the Eustachian catheter into the Eustachian tube, for the relief of tinnitus aurium.

For the extraction of foreign bodies from the larynx, the pharynx and larynx should first be thoroughly sprayed with adrenalin, followed by a spray of a fifteen-per-cent solution of cocaine. The risk of a toxic effect of the cocaine is thus reduced to the minimum, and its local anesthetic effect is increased to the maximum.

As to the stability of adrenalin solutions, there still exists a degree of doubt. Since they can be frequently sterilized without loss of strength, there is scarcely any excuse for taking chances on an old solution, or one which has been exposed frequently to the atmosphere. Numerous experiments warrant the statement that solutions, properly protected, remain perfectly stable for at least six months.

Previous to applying the adrenalin solution, an amount sufficient for the work in hand should be poured into a small glass receptacle, and thus the chance of introducing any deteriorating agent into the original solution is obviated to a great extent.

INTRA-UTERINE INJECTIONS.

KOHN (quoted in *Der Frauenarzt*, July 19, 1901) treated eighty-three cases of endometritis, salpingitis, salpingo-ovaritis, etc., by injections made up of equal parts of iodine tincture and alcohol, to which was added a five-per-cent solution of alumnol. If these injections caused much pain either about the uterus or in the region of the kidneys, the patients were given either suppositories of morphine, or above the stomach a few drops of tincture of iodine. Each patient was given eighteen to twenty injections. It was noted that after the first treatment the pain disappeared, defecation and urination became less distressing, and the swelling about the uterus diminished and was less tender. The uterine secretion also grew less and was more serous, while the affection of the tubes rapidly diminished. More than half of the cases were completely cured, and the rest were distinctly bettered. The best results were obtained in eight cases of chronic inflammation of the mucous membrane and parenchyma of the uterus, in fifteen cases of inguinal endometritis, and in twenty-seven cases of chronic subacute perimetritis. These favorable results are attributed to the destruction of the uterine mucous membrane, accomplished by the action of the tincture of iodine. Although 900 injections in all were given, no alarming symptoms developed in a single case.

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Leading Articles.

THE USE OF OLD ANTITOXIN.

As is well known the various manufacturers of antidiphtheritic serum are accustomed to have it returned to them by the retail druggist or physician after it has been in their possession for several months in order that the stock may be replenished with freshly made material. This is done because it is a well known fact that the serum is apt to diminish in its antitoxic power with the passing of time, and in order that the full antitoxic value may always be received by the patient. With the approved methods which have been introduced for the manufacture and preservation of this product, it has been found that deterioration takes place less rapidly than in the serums which were first prepared. The most careful manufacturers see to it that the hermetically sealed tubes in which the serum is placed contain a greater number of antitoxic units than is put upon the label, allowing, in this way, for a slight deterioration to take place without in any way decreasing the value of the product; or, in other words, it is possible for the serum to lose somewhat in its antitoxic power, and yet be as strong as the label states it to be.

While therefore it is advisable for physicians to employ fresh serum whenever possible, it is extremely inadvisable for a physician to fail to give the antitoxin which may be in his possession simply because it does not bear a recent date. On the contrary, such serums are very frequently possessed of a great deal of power, and should always be used at least until a fresh supply can be obtained. This fact is not only recognized in this country by those who have had the most experience in the matter, but it is interesting to note that the French Minister of the Interior has given directions that physicians shall not wait for the receipt of a fresh supply, but shall immediately begin the administration of that which they have on hand rather than lose precious time; for as we all know, the value of antitoxic serum is in direct ratio to the promptness of its employment after the disease is recognized. Even if the serum has been kept for as long a period as a year, and a slight sediment is formed, this does not in any way indicate that there has been any material alteration in its value. When it is considered that the administration of full doses of antitoxin, on the first day the false membrane appears, decreases the mortality to as low a point as two per cent, and on the second day to six per cent, the importance of administering whatever may be at hand is emphasized. This is the more important when we recall that the death-rate is thirty per cent when the injection is made as late as the third day, and fifty per cent when it is made as late as the fourth day.

THE ABUSE OF STRYCHNINE AND A SUBSTITUTE FOR IT.

Several years ago we published an editorial in the THERAPEUTIC GAZETTE calling attention to the fact that while strychnine is a most valuable drug in many conditions, it is on the other hand capable of doing harm if abused. We expressed a belief at that time that it is given too commonly as a true stimulant rather than as a "whip" to an exhausted nervous system with the object of rallying the patient's strength until a dangerous crisis may be passed. It

was also pointed out that the continued use of strychnine in diseases like typhoid fever or pneumonia frequently produces not only an excess of nervous irritation, an irregular temperature, and a rapid pulse, but also is capable of rendering the patient unduly irritable, and where exhaustion is extreme it may actually cause a certain amount of delirium. It has always seemed to us that strychnine is essentially an irritant stimulant which should be applied in a crisis, only a few doses at the most being given, and that its continued employment is like applying a whip constantly to a tired horse, with the result that in the end less energy is developed.

Of course, these remarks do not hold true concerning small doses of strychnine which are given during convalescence for the purpose of getting the effect of a bitter tonic and a slight nervous stimulant, but increasing experience convinces us that the physician who relies entirely upon strychnine as a circulatory stimulant in the course of fevers is making a therapeutic mistake. The question then arises, if strychnine is not to be employed except in emergencies complicating fevers, what other drug possessing a somewhat similar influence can be used with advantage? The reply we think is that caffeine is a remedy which is not employed with sufficient frequency. Its influence upon the system is in some respects like that of strychnine, but in others is quite different. There can be no doubt that it is a powerful respiratory and circulatory stimulant, and it possesses the additional advantage of being an active stimulant to the kidneys, thereby increasing the elimination of effete materials. That it can be abused if used in too large a dose for a long period of time is of course a fact, and the same possibility exists in regard to every drug which possesses distinct therapeutic power. While it does not lend itself to hypodermic injection quite as readily as does strychnine, it can very readily be so used if properly prepared, and the fact that many patients are accustomed to the employment of coffee enables us to give doses of it which are large without producing nervous symptoms or insomnia. Even if it does cause some sleeplessness, when given in full dose late in the day, this symptom may be removed by the simultaneous or later employment of moderate doses of the bromides.

THE DEVELOPMENT OF ANURIA AFTER THE USE OF ANESTHETICS.

There are no drugs employed by medical men which have caused so much discussion as have the various commonly employed anesthetics. Every one is familiar with the battles which have been fought for and against ether and chloroform, and every physician and surgeon of experience is also familiar with the disagreeable effects which sometimes follow the administration of either of these drugs. We are convinced that in the majority of instances these evil effects are largely dependent upon the fact that the physician who administers the anesthetic is careless in its employment; or, in other words, that he permits his assistant to be careless. We doubt if we exaggerate matters in expressing a belief that twice as much ether is given as is absolutely necessary to produce the surgical anesthesia required. The great majority of resident physicians in hospitals are urged by operators to hurry their patients under the influence of the anesthetic, and give it so profusely in the early stages of anesthetization as to rapidly narcotize the patient, producing active struggles, because of his sense of suffocation, and they then push the anesthetic harder than ever before in order to overcome these struggles, with the result that the patient is overwhelmed by the drug, and not infrequently is further saturated by its continued employment in excessive quantities. We use the word "saturated" with care. It is quite extraordinary to notice the difference between the breath of a patient, after operation, who has received moderate quantities of ether and the breath of another patient several days after operation who has been saturated by its too free employment.

There are three features, aside from actual renal disease, which are probably responsible for the development of anuria or deficient secretion of urine after the employment of ether. The first of these is the degree of saturation of which we have spoken, which undoubtedly does much toward interfering with renal activity; not necessarily irritating or inflaming the secretory epithelium of the kidney, but so depressing the circulatory system that the flow of blood through this organ is interfered with. For it must be remembered that no gland can be active without a proper

supply of blood, and that cardiac depression often results in renal congestion and stasis, with functional disorder of the kidney, without there being present any actual renal lesion.

The second cause for the development of this dangerous symptom is the too free exposure of the patient's body to cold, either in the way of wet dressings, or in the air of the operating-room. This feature in producing evil results is being more and more rapidly eliminated each year. Surgeons are recognizing the necessity of maintaining their patients' temperature, and are using superheated operating-rooms and applying hot bottles. Nevertheless, in all private practice and even in hospital practice a good deal of unnecessary exposure is permitted, and chilling the surface also produces renal congestion and imperfect kidney activity.

The third condition which seems at times to develop anuria is operations performed on any portion of the genito-urinary tract, under which circumstances, apparently by some reflex influence, the kidney becomes more or less disturbed in its functions.

These conditions can therefore be largely avoided by the taking of proper precautions, but if they arise nevertheless, it is necessary that active treatment should be instituted.

There are three measures which we believe to be particularly useful in these cases. First, the administration of circulatory stimulants, if there are any evidences of depression of the heart and vessels, and by these we refer especially to strychnine and moderate doses of digitalis. Secondly, the introduction into the bowel of copious injections of normal salt solution. Thirdly, the employment of nitroglycerin, hypodermically or by the mouth, if we have reason to believe because of the presence of sclerotic changes in the blood-vessels that there is a tendency to spasm of the renal arteries. Not infrequently, under the influence of nitroglycerin upon these vessels, a free secretion of urine takes place.

SKIN ERUPTIONS PRODUCED BY A DRUG.

On several other occasions we have called attention to the frequency with which various drugs produce pathological changes in the skin when they are given with the object of affecting internal organs, and we have quoted the statement made by an eminent dermatologist that a very considerable number of the patients sent to him by general practitioners were not suffering from any of the ordinary skin diseases, but from the eruptions caused by the drugs which they had administered. This subject is a very important one, and for this reason we are glad to be able to publish in this issue of the GAZETTE an illustrated article by Dr. Stengel, in which he reports a case in which the administration of iodide resulted in the development of a very well developed eruption, and one by H. C Wood, Jr., on quinine rashes. Our attention has also been called to a paper by Dr. J. B. Shelmire, of Dallas, Texas, which is published in the *Texas Courier of Medicine* for October, 1901, of an instance of a man thirty-four years old who was admitted to a hospital suffering from asthma and alcoholism. He was put upon ascending doses of iodide of potassium, beginning with 20 grains per day. Six days later he noticed an eruption on his arms, body, and legs which resembled urticaria. This rash smarted, but did not itch. Two days later many papules and pustules, hemorrhagic in character, appeared over the urticarial eruption, and speedily spread to the face, arms, neck, body, and legs, being most extensive and confluent on the extensor surfaces, and least marked on the face. Over the shoulders there were petechiæ, papules, pustules, vesicles, and purpuric spots, and over the arms, back, abdomen, buttocks, and legs there were similar lesions. The fluid in some of the vesicles was clear and remained so. In others it speedily became discolored, and then dark and almost black from admixture with blood, due to hemorrhages into the pustules. The temperature was only slightly elevated, and the rash persisted for nearly two weeks, leaving behind it distinct pigmentations of the skin. The treatment consisted in stopping the administration of the iodide, the administration of salines and the employment of a weak solution of witch-hazel externally. Wood has overlooked in studying the literature of quinine rashes the extraordinary case reported in the GAZETTE, a year since, of desquamation of the shin following the use of minute doses of quinine.

THE PREVENTION OF TUBERCULOSIS.

Some of our readers may have noticed within the last few weeks despatches in the daily papers calling attention to the fact that the New York immigration authorities had ruled against the admission to the United States of an individual who was suffering from marked pulmonary tuberculosis on the ground that these cases came within the meaning of the words "a dangerously contagious disease," for any patient suffering from such a malady can be excluded under our immigration laws. We have been sorry to notice that in one or two instances medical journals have taken the stand that this individual should be admitted, and several medical men have testified in public or otherwise that in their opinion the Treasury Department is both unscientific and inhumane in making such an exclusion. We do not intend to argue the point as to whether tuberculosis is strictly speaking a contagious disease. To argue in this way is simply "beating around the bush" in an attempt to get behind the law. The object of those who passed this law was to prevent the introduction into this country of diseased persons who might spread their malady to healthy individuals, and manifestly tuberculosis is above all others one of the preventable diseases which should be excluded. If it is not contagious, it is certainly infectious, and it makes little difference whether a patient walks the streets exhaling contagium which like scarlet fever or smallpox may infect those who associate with him, or whether he discharges tuberculous sputum upon the pavement, which, when formed into dust, enters the lungs of other individuals and produces a malady equally dangerous with the infectious diseases that we have named. In either instance, his presence is a menace to the lives of others.

We recognize that such rulings produce individual hardships, but so does every quarantine law which is in existence. The point advanced that tuberculous immigrants should be refused and tuberculous aliens of means should be admitted seems to us hardly one which can be recognized in law, however advisable it may be from a commercial point of view.

TREATMENT OF HEAD INJURIES.

Following trauma applied to the head, death may be almost instantaneous when the injury is of such crushing force as to produce excessive laceration of the brain substance. Usually there is immediate unconsciousness, followed by symptoms of increasing pressure that may end in death, or by the same symptoms which after a time gradually subside and end in partial or complete recovery of the cerebral functions. There is often a temporary return of consciousness, followed by dulness and stupor. In the lethal cases this stupor develops into a coma, the temperature rises toward the fatal termination, the pupils fail to react, the respirations are slow and snoring, and the pulse is slow. Paralysis is common. At times clonic spasms are noted. These symptoms are precisely those produced by slowly increasing intracerebral pressure, hence the name commonly applied to them.

This pressure may be due to a hemorrhage, which is most likely to be profuse when epidural. Phelps has shown that pial and cortical hemorrhages are rarely sufficient in themselves to produce marked cerebral compression, the hemorrhage from the pia forming usually a diffuse thin sheet over the vertex. Since Duret has, by experimental investigation, shown that it requires a diminution of the intracranial space by five per cent to produce somnolence and coma, and by eight per cent to cause death, it is evident that, if extradural hemorrhages be excepted, bleeding incident to traumatic rupture of the cerebral vessels is rarely sufficient to result fatally by its encroachment upon the cranial capacity.

Associated with hemorrhage there is practically always contusion. Phelps has found that this is characterized by visible anatomical changes, namely, a distention of the parenchymatous vessels, a general forming of minute thrombi, the presence of punctate extravasations, and a more or less distinct edema. The edema is variable in amount, sometimes appreciable only after some delay, and a close inspection upon section. At other times it is so obvious that the fluid can be squeezed from the brain as from a sponge. The edema is evidently secondary to bleeding and thrombosis.

While it is obvious that laceration of the brain with sudden, profuse bleeding, or rupture of the large blood-vessels through effusion of blood, may rapidly cause death, it is not the reason for the fatal termination in the case of contusion without gross laceration, characterized by lesions so slight as to be with difficulty demonstrated. Of

course, the presence or absence of a fracture of the skull is of minor importance except when the fragments are depressed, or when the fracture is compound, as it so often is at the base, thus exposing the patient to the danger of infection. This danger can, however, as a rule be avoided. It is to the edema following these comparatively slight lesions that Cannon, in an admirable paper upon cerebral pressure following trauma, ascribes the development of pressure symptoms.

Bullard is quoted to the effect that the pathological processes resulting in an increased intracranial pressure are apparently due to a swelling of the brain itself, in part to filling and infiltration of the blood-vessels, in part to edema of the cerebral tissue resulting therefrom, and in part also to excessive bleeding between the pia and the dura. That the subdural fluid is not alone a cause of pressure symptoms is shown by the fact that in many cases the increase in fluid is not very great and may not be apparent. Distention and protrusion of the brain after cutting the dura, furthermore, indicates that the intradural pressure is not in any great degree due to the fluid which has escaped. The pressure is usually due to a swelling of the brain itself.

It seems clear that in head injuries characterized by an interval of apparent convalescence followed by pressure symptoms, there must be an increase of intracranial pressure, which, if it reaches a degree equal to the blood-pressure in the arteries, will necessarily result fatally, since the circulation in the cerebral blood-vessels is stopped.

With the idea of determining the reason for this blood-pressure, Cannon conducted a series of experiments upcn cats, which, it is worthy of note, were fully etherized. He noted that severe concussion frequently disabled the respiratory centers, the respiration entirely ceasing, although the heart continued beating for some time. Under these circumstances, if artificial respiration is persisted in, the respiratory center may wholly recover its function. At the time of the injury, and for a few moments thereafter, a slight rise in blood-pressure was to be observed. This was followed by a more pronounced fall, after which there was a gradual return to the normal. As to the secondary effects of the injury, by a series of most ingenious experiments, corroborated by the work of other physiologists, Cannon shows that this secondary increase in pressure is due mainly to three factors—departure from the normal pressure in the injured parts, the passage of water into these parts, and because of the rigid inclosure of the brain, a secondary effect upon neighboring regions.

The thrombosis, extravasation, and hemorrhage that accompany contusion impair the blood-supply of the injured parts, especially since the internal arteries of the brain are terminal. Brain tissue deprived of blood undergoes chemical changes which result in greater internal osmotic pressure, and the passage of water into the tissue. The main force effective in causing swelling is probably osmotic pressure, which in brain tissue may attain a degree so much greater than blood-pressure that the blood would really be prevented from entering the cranium.

This physiological and pathological study implies certain important deductions. First, in regard to the treatment of severe concussion attended by suspended respiration, it is obvious that an efficient method of artificial respiration long persisted in may be life-saving in its effect. It is next clear that in so far as this is practicable local pressure should be removed, since this may prove a factor in the development of a general and fatal edema. There is then a further indication for the elevation of accessible depressed fractures, and for the removal of even small supra- or subdural clots. As for the methods by which the osmotic edema may be prevented, it is not clear as to how this can be accomplished. On general principles, absolute quiet, moderate elevation of the head, the application of cold, and free movements from the bowels are desiderata in the after-treatment of head injuries.

At one time opium and mercury were regarded as almost specifics against post-traumatic congestion or inflammation. It is evident that neither of these drugs is at the present day extensively relied upon, and as a rule they are ordered only when special indications are noted that seem to require their use.

With the view of determining the extent to which opium, potassium iodide, and mercury are employed in the routine after-treatment of head injuries, a number of letters were sent out. The following are the replies:

Except in the first years of my practice, a period of twenty-one years, I have rarely met conditions

following this class of injuries in which I felt that these drugs (opium and potassium iodide) were especially indicated, or in which their administration was likely to be followed by any appreciable benefit. I might make the same statement of calomel and other mercurial preparations which twenty years ago were still vaunted most enthusiastically by the classic authors as great promoters of absorption of inflammatory exudates, etc.

I must confess to a deeply rooted skepticism in the value of the so-called "alterative" action of the mercurials and potassium iodide to promote the absorption of extravasated products and organized exudates. A belief in their value, I believe, rests chiefly upon their beneficial action in cases complicated with syphilitic, rheumatic, or other specific infections in which they undoubtedly do good. But in the purely traumatic conditions their value, as I conclude from my early experience, is *nil*. I firmly believe that traumatic cases showing signs of compression from exudates, which are apparently relieved by these drugs, would have done just as well by themselves, with the help of rest and ordinary hygienic and supportive measures. As to opium, I only use it to relieve pain, purely as an analgesic, and then only when other measures or drugs less likely to do harm fail to secure the necessary relief and rest. I do not believe that it has any specific or special value in the treatment in this class of injuries except by its general analgesic and hypnotic action. It may be that my pessimistic opinion of the value of these drugs is the result of skepticism brought out by my early disappointment in these as in many other drugs, in which I had enthusiastic confidence, and applied them regularly as routine remedies in accordance with classic recommendations; and it is quite possible that in consequence of these early disappointments I have become so prejudiced that I may have missed some favorable opportunities for the exhibition of their really useful properties. If this is the case, I can honestly confess that I have not yet seen the case in which the absorption of a purely inflammatory (non-specific, *e. g.* syphilitic) or organized exudate was ever hastened by the use of K. I. or the mercurials. At least, if this effect was obtained, it could never be clearly demonstrated to my satisfaction.

I should much prefer to make a statement based upon detailed observations, but this would take too much space, and is unnecessary, since, as I understand your inquiry, what you wish are my impressions based upon accumulated individual experience, and this is what I have honestly endeavored to do.—R. MATAS, New Orleans.

I have no experience in the use of either opium or iodide of potassium in head injuries. I am a great skeptic about the action of drugs apart from a certain few whose definite actions are well known. The practice referred to in your letter has not commended itself to my judgment, and I have therefore not adopted it.—JAMES BELL, Montreal.

I really have no views concerning the use of opium and potassium iodide in the after-treatment of head injuries, for I have never employed these drugs in the treatment of such cases.—W. HALSTED, Baltimore.

I never use opium or iodide of potassium as a routine treatment of head injuries. I use opium occasionally to prevent the extreme exhaustion which sometimes follows the delirium or restlessness of laceration of the brain, and in cases of meningitis following fracture of the base, but not with any idea of benefiting the actual lesion.—G. E. BREWER, New York.

I always use opium after head injuries if the patient has excessive or painful peristalsis accompanied by watery or mucoid intestinal discharges. Paregoric is the preparation preferred.

If the injury occurs in a person who has gummata, or rupia, or nodes, or even a distinct specific history, I employ potassium iodide, which I usually give dissolved in water. So far as I know, all my medical friends in this part of the country follow this practice.—J. WILLIAM WHITE, Philadelphia.

It is evident then that the practice of frequent administration of Dover's powder and calomel or the administration of iodide of potassium has either not been practiced or has been abandoned by men whose experience and whose professional standing entitle them to speak authoritatively. It is also clear that the drug or drugs likely to be of general service in the after-treatment of head injuries are yet to be discovered, and that after surgical treatment, when this is indicated, the best results are probably to be obtained by a conservatism based on principles of common sense.

SPINAL ANESTHESIA.

The comparatively few cases of spinal anesthesia recently reported in medical journals seem to show that the reaction against a method that has been proved to be more dangerous than is commonly implied has fairly set in. Hahn notes eight deaths in 1708 operations, a mortality greatly in excess of even that attendant upon the use of chloroform. Tuffier had at least five deaths in 252 operations, but this surgeon believes that none of these deaths could be rightly attributed to spinal anesthesia. The cause of death in feeble patients is apparently cocaine intoxication.

It is also worthy of note that a number of failures are reported. Thus, Murphy, in 631 cases at the hands of twenty-nine operators, observes that the anesthesia was not accomplished in twenty-one cases.

Richardson is opposed to the method on the basis of Tuffier's cases, some of which he personally witnessed in Paris. He thinks Tuffier's cases have not been properly presented in that author's publications.

The technique is so easy, and there is still an air about it, at least to the public, of such novelty, that many surgeons are likely to employ it even when there is no proper indication for its use. It should be remembered that a special needle is required, that it is to be thrust in just below a line passing

transversely from one iliac crest to the other as the patient stoops forward, and a little to the right or to the left of the median line, and that one cubic centimeter of a two-per-cent solution of cocaine, slowly injected, is employed. This cocaine solution should be warm, and should have been subjected to a fractional sterilization. Analgesia is usually developed within ten minutes, sometimes not for half an hour, and is likely to be complete up to the lower rib margin. Its duration may be from one-quarter hour up to three hours, but the average duration is between one and two hours.

It should be remembered that we have no knowledge of the ultimate effect of these injections upon the cord, and that agonizing headache and persistent vomiting are by no means uncommon after the employment of this method. It has been shown that this headache and vomiting are incident to a meningitis. At least, fluid withdrawn from the subdural space after an anesthesia has shown a turbidity from admixture with leucocytes which bears a ratio to the severity of the after-symptoms.

Bier has lately said that the method in its present form is unfit for general employment. With this view the majority of the physicians who have followed the literature on the subject, and who have observed cases subjected to this procedure, will agree.

Reports on Therapeutic Progress

THE DRUG HABIT: ITS TREATMENT.

In the *Texas Medical Journal* for November, 1901, LOTT details his treatment of the morphine habit as follows:

In the treatment for the morphine habit, or other opiates, or chloral or chloroform, no preparatory treatment is necessary. It is best to begin while the patient is well under the influence of his daily dose. He sleeps longer, and is more quiet than if treatment is deferred until about time for the patient to take his daily potion. In dealing with the whiskey habit, it is different. The treatment should be deferred until the patient has come from under its influence. In either case a full knowledge of the condition of the heart and kidneys should be obtained. While the writer says that he would not hesitate to place a patient under treatment who has heart or kidney trouble, if he were otherwise in fair condition, still he thinks it best to know of these conditions, and use from start to finish a fair amount of strychnine nitrate 1-20 grain hypodermically. During the first forty-eight hours there should be no food given, or at least very little, and it should be of the lightest character, for most likely the digestive process will be suspended at this time; the food will sour and aggravate a diarrhea that will set in during this period, after the withdrawal of the morphine.

The author then refers to the antidotes that are employed, and which are the same as are used by the various sanatoria. Some of these institutions claim that their methods are a profound secret, known only to themselves. This claim is believed to be utterly false; but by this secrecy they are enabled to secure large fees from persons able to pay, while the unfortunate victims of the habit too poor to pay the fee must continue to suffer. Their doom is sealed. The patient's physical suffering is not only to be considered, for instead of being regarded as a sick man, which he really is, he is generally considered a moral pervert, and his appeals for relief are treated with scorn and contempt instead of kindness.

The remedies are but few, and most if not all of them are quite familiar to the profession. They are in almost daily use. They are: Duboisine, atropine, strychnine, and the hydrobromate of hyoscine, hyoscyamine, pilocarpine. All these the writer has used, but prefers the hydrobromate of hyoscine as the safest and most easily controlled, and usually begins the treatment by securing a quiet, well ventilated room with but a moderate degree of light, and so arranged that the light can be excluded, for under the influence of hyoscine, or atropine, the pupil is widely dilated, and if there be too much light the eyes are liable to be injured. He then secures a careful, competent nurse. He or she should be strong, and able to handle the patient, if necessary, for sometimes, if too much hyoscine be given, the patient will require to be protected against self-injury. The room should be down-stairs preferably. The patient should be given a good bath and put to bed. Lott gives 1-100 grain of hydrobromate hyoscine, and after this the 1-200 grain from thirty minutes to one hour for from twenty-four to forty-eight hours, until the patient has taken from forty to sixty doses, sometimes decreasing it, and sometimes omitting a dose altogether, watching carefully the pulse and respiration; the object being to secure hyoscine intoxication, which is readily recognized by the restlessness,

dilated pupils, dry throat, hallucinations, etc., which it produces. When this stage is reached, the drug is then given just often enough to keep up the delirium from twenty-four to forty-eight hours.

It may be necessary during this period to give a small dose of morphine, even one-fourth grain, once, twice, or three times; it will not affect the result in the end.

Generally it is not necessary during this period to give anything else, though it may be necessary to give strychnine, or nitroglycerin, or digitalis for the heart; but always remember that hyoscine antidotes morphine, and that morphine antidotes hyoscine. If the patient should get too much of one, give the other.

Usually the first few hours, sometimes for four or six hours, but in some instances a much longer period, the patient sleeps. In one instance the patient slept twenty-two hours. The pupils become widely dilated, and the mouth and throat are very dry, and the patient loses the power of coördination and would be unable to stand, if permitted to get out of bed; he would likely fall and hurt himself. For this reason a nurse is constantly at the bedside. Usually after a few hours' sleep a delirium comes on and the patient is quite wild. He imagines that he sees and does things that do not occur. If specks are on the quilt, the patient is likely to imagine them to be chinches, and may spend hours picking them off, often remarking on their appearance and number.

During this period it is necessary to give the patient water frequently, as the throat and mouth are very dry. At the end of this period, generally, the patient is permitted to come from under any drug, and after a few hours reason is restored. The patient expresses himself as cured. He no longer craves the drug, and would not take it.

At the end of the first stage of treatment the hyoscine, duboisine, or whichever of the group may have been used, should be left off, and a second stage of the treatment should be begun with pilocarpine in one-eighth grain doses, which is to be repeated every hour until its physiological effect is secured; then the time between doses is to be lengthened, and kept up sufficiently often to maintain the effect, which is elimination of the drugs that have been stored in the cord and in the body; or in other words, until the last vestige of the symptoms of hyoscine has disappeared. The characteristic sneezing and attempting to yawn now commence.

During the past forty-eight hours no nourishment, or very little, has been taken, and the diarrhea has commenced. This will be likely to vex the patient for some days to come, and until now the urine has been scant and high-colored.

At this period, the end of forty-eight hours, the patient has been relieved of the morphine, and thus far there has been very little or no suffering. And now pain in the knees, elbows, and the back often sets in. Sometimes there are cramps. These are to be relieved, and here the ingenuity of the physician is called into play; for the next few days the real battle is on, and the necessities, real or imaginary, of the patient are to be met.

For the diarrhea subgallate of bismuth should be given in 30-grain to 60-grain doses, with fluid extract of coto bark in 20- to 30-drop doses in water at the time of giving the bismuth. This will relieve the diarrhea in a few days. It is at this time the use of pilocarpine 1-8 grain, and strychnine 1-20 grain or 1-30 grain, hypodermically, should be given. Under this treatment the dryness of the mouth and throat passes away, the urine clears up, the skin becomes moist, and the appetite begins to return; and in a week or ten days the stomach will digest almost anything offered, and the progress is faster. But the patient is nervous and restless; he sleeps poorly, and there are the pains in the limbs and back. For these and the sleeplessness a bath, either hot or cold, or the faradic current, will be found very beneficial. Under these methods the sleep will soon come naturally. But it may be advantageous sometimes to give large doses of the bromides of potassium, ammonium, and sodium a few times, even adding chloral if necessary. But usually it is best to wait for a natural sleep. The pains can be relieved by rubbing with liniments, or by electricity, bathing, pilocarpine, strychnine, atropine, or a few doses of hyoscine.

Under the stimulus of wholesome, nutritious food, by the end of a week the patient will begin to relish these, and the countenance of the once wretched and wrecked patient, the picture of despair, feeling the warm pulses revive, with richer food and better nourishment, will regain its natural expression and color; and the brightened eye under the power of an invigorated heart tells of the hope once more kindled in his breast.

SUCCESSFUL PHOTOTHERAPY.

The recent award to Professor Finsen, of Copenhagen, of one of the magnificent Nobel prizes (its value is over $50,000), established by the will of the great Danish manufacturer of dynamite, recalls the attention of the medical world to Finsen's successful researches in the domain of light therapeutics. It is fortunate, for in the multitude of claims on medical attention sometimes the really good things are for a time at least crowded out of sight. Professor Finsen's work, accomplished with patient scientific carefulness, and modestly given to the medical world, with none of that blare of trumpets that has so often of late accompanied less deserving and successful effort, fully merits the reward and the renewed attention that will be given to it as a consequence.

Professor Finsen's researches into the effect of light on human beings began with the investigation of the influence of light in smallpox. Only parts of the body, as the face and hands, that are exposed to the action of light during the course of the disease become disfiguringly pitted by smallpox. All the methods of treatment suggested for smallpox, before Finsen's investigations, that had any measure of success in the prevention of pitting had this in common—they kept the hands and face of the patient more or less thoroughly protected from light. This was accomplished in various ways, mostly without any direct intention of light occlusion on the part of the inventors, but fulfilling this purpose unfailingly. Professor Finsen then protected a series of smallpox cases from the light, and showed that this method of treatment sufficed in practically every case in which it was begun sufficiently early in the disease to suppress the secondary suppurative stage of the disease, and consequently to prevent all danger of pitting. It is almost needless to say that it is the secondary fever of the smallpox which constitutes the most serious period of the disease. It is at this time that the vast majority of the deaths from the disease take place, and that consequently Professor Finsen's treatment, far from being only cosmetic in its effects, saves many lives and much suffering.

Finsen was thus encouraged to investigate further into the action of light upon the skin. He found that the harmful effects of light were all due to the rays from the violet end of the spectrum. The light rays that affect a photographic plate, some of them beyond the violet in the spectrum, and so producing no sensation of light for human vision, are also factors in the production of irritative skin conditions. For the successful treatment of smallpox cases it was only necessary, then, to exclude the violet and related rays of light by means of dark-red glass. This discovery has been confirmed by many observers, and especially in our present smallpox conditions deserves more serious attention.

Finsen's researches were appreciated by his fellow countrymen better than is usually the case. He was enabled to continue his investigations into the possibilities of preventing the harmful action of light in disease, and using it as a direct therapeutic agent, in the generous erection for him of a Light Institute in Copenhagen. He knew that light was a bactericide. His investigations in smallpox showed that the action of light penetrated well beneath the superficial layers of the skin. In variola the light injured the cutaneous cells more than it did the microbic cause of the disease, but it might well prove that in other diseases the bacteria would be destroyed without serious injury to the skin. Finsen tried the action of concentrated light upon lupus patients, and found that it produced a cutaneous reaction that was followed by the cicatrization of the lupus nodules. He continued his observations for several years, and convinced himself of the absolute certainty of his results before he gave his conclusions to the public. His communication was considered to be one of the most valuable practical contributions to dermatology in the last decade of the century.

Finsen experimented with the action of light in other diseases, but without as much success as in lupus vulgaris. Lupus erythematosus was sometimes favorably influenced by phototherapy, but sometimes it was not. If the disease is due, as is thought by many, to the toxin of tuberculosis in contradistinction to its congener lupus vulgaris, which is the result of the presence of tubercle bacilli, then the difference in the effect of light on the two diseases would seem to point to a true parasiticidal action of light in the therapy of lupus vulgaris. This is confirmed by the fact that alopecia areata is always favorably influenced by exposure to concentrated light, for this disease is now very generally considered to be due to the presence of a parasite.

In recent investigations Professor Finsen has shown conclusively that light, apart from heat, is capable of producing effects in the skin that persist for long periods. Exposure of the arm for twenty minutes to the light of a 40,000-candlepower electric light (the large arc light used for lighting city parks and squares is, according to Professor Finsen, never of more than 4000-candlepower) is followed by a severe inflammatory reaction, and then by pigmentation that persists for many months. Finsen's patient, modest, successful work deserves the reward that has come to him all unsought. The monetary part of it will doubtless be well employed in furthering the progress of phototherapy. He has gathered around him a band of younger workers who have caught some of his enthusiasm. A recent volume of the Transactions of the Finsen Medicinski Lysinstitut (Medical Light Institute) gives promise that this new and encouraging branch of therapeutics will receive the due share of careful experimentation that will guarantee its timely development to the fullest possible extent.—*Medical News,* Sept. 2, 1901.

FOREIGN BODIES IN THE NOSE AND EAR.

In discussing the treatment of such conditions FRIDENBERG, in the *Medical Record* of September 2, 1901, reminds us that it is well to try simple measures at first. After spraying the nares with a four- to six-per-cent solution of cocaine, and applying adrenalin solution or suprarenal extract in fluid or powder form, the unobstructed nostril should be closed and the patient instructed to blow vigorously. This alone, in some cases, is sufficient to dislodge a small, smooth, or unimpacted body, such as a button or cherry-pit. In children who are too young to blow the nose themselves, we may use inflation with a Politzer bag, blowing air in through the free nostril. Mackenzie advises the introduction of a stream of water through the unaffected side to flush out the obstructed passage. This advice is hardly safe, however, as the stream of water must fill the nasopharynx with considerable force if it is to have sufficient impetus to loosen and expel a foreign body through the other side. The orifice of the Eustachian tube may be forced open by such a procedure, and water plus nasal secretion forced into the middle ear with unpleasant results. Direct syringing of the obstructed cavity through the anterior nares, or, better still, through the pharyngeal opening with a postnasal syringe or curved catheter, is a safer plan.

Sajous's method of clearing the nasal passage by drawing a tampon of moistened gauze through it from behind may be of service at times, especially if the foreign body has lodged or been pushed back toward the posterior nares. If these maneuvers fail, direct extraction by instrumental aid must be tried. A strong probe bent over at the tip, a foreign-body hook, a wire loop, or a blunt curette may be passed between the foreign body and the wall so as to draw it forward and out, or at least to loosen it so that it may be grasped between the hollowed jaws of a slender angular forceps and extracted with a slightly rocking motion, and as carefully and as gently as possible. If the mass is too large to pass out at the nostril, we may have to push it back into the nasopharynx, after cocainizing the mucous membrane of these parts. The patient's head should be inclined sharply forward, or a finger passed into the nasopharynx to prevent the foreign body falling into the glottis.

If the dimensions of the foreign body are such that it cannot even be pushed into the nasopharynx, an attempt may be made to break up the mass by the use of crushing forceps, rongeur, or cartilage scissors, or in exceptional cases to shrink it by repeated application of the galvanocautery point. Very large rhinoliths may be reduced chemically, if subject and physician have sufficient patience, by the application of concentrated acids, as suggested by Voltolini.

Gauze and cotton plugs which have become soaked with blood and secretion easily escape detection, and the latter are removed with some difficulty if adherent, as they shred off and come away piecemeal with the forceps. The use of cotton for deep plugging cannot be too strongly deprecated, and when gauze is used we should know just how many pieces have been inserted.

Epistaxis, more or less copious, may interfere with instrumental extraction, and this must be controlled if we wish to proceed safely and thoroughly. The preliminary application of suprarenal extract and cocainization will be of material assistance in this respect, as well as in diminishing swelling, and so giving a larger channel for the removal of the foreign body.

In the rare event of insects or maggots

having entered the nose, syringing out with large quantities of weak bichloride solution (1:1000), carbolic acid (one-per-cent), tobacco-water, or chloral hydrate, turpentine inhalation or insufflation of calomel has been suggested to kill and dislodge the troublesome visitors. The use of chloroform injections, pure or in mixture, with an equal bulk of water, seems to have met with universal approval, and to have superseded the other solutions. The injection, however, is painful, and may be preceded by a general anesthetic, preferably chloroform itself. The inhalation alone is sometimes quite sufficient.

In the after-treatment of all these cases attention should be paid to two important points—the cleansing of the nasal passages and the prevention of postoperative hemorrhage and infection.

HYPODERMIC AND SUBMUCOUS INJECTIONS OF PARAFFIN.

Moszkowicz *(Wiener Klinische Wochenschrift,* June 20, 1901) reports thirty cases in which purified paraffin was injected hypodermically in the clinic of Gersung, who originated this method of treatment. By mixing solid and liquid paraffins in certain proportions an ointment is obtained with a melting point of from 96.8° to 104° F. This is sterilized by boiling, is drawn into a sterilized syringe while liquid, and injected after partially cooling, so that it issues from the needle as a semisolid thread. The melting point is of importance, because paraffins with a lower melting point are not sufficiently firm, and those with a higher require to be injected so hot that there is danger of producing thrombosis in the veins in the neighborhood. This probably occurred in the case reported by Pfammensteil, in which, after the injection of paraffin with a melting point of 113° F. round the neck of the female bladder in order to reduce the size of the opening and cure incontinence of urine after resection of the urethra for carcinoma, there were symptoms of pulmonary embolism. In Gersung's clinic the injection of the paraffin with a lower melting point has never produced untoward symptoms. Sterilized paraffin is non-toxic, and produces no reaction when injected hypodermically. Unless it is injected in situations in which it is immediately exposed to pressure or violent muscular contractions, paraffin remains at the seat of injection, and eventually becomes encapsulated and of cartilaginous hardness. The newly formed connective tissue penetrates the mass and eventually encloses it in a sponge-like meshwork. It is probably never absorbed. Two years ago an artificial testicle was made by injecting paraffin into the scrotum after castration; it is now of stony hardness, but has not diminished in size. In cases in which much paraffin is injected, or in which the injection is made into unyielding tissues, Schleich's infiltration anesthesia should be employed. The injections have a wide range of usefulness. They were employed with success to remedy incontinence of urine in a woman after the removal of the sphincter vesicæ and the whole of the urethra; to improve phonation after an operation for cleft palate (the injection was made behind the posterior wall of the pharynx, which was thus made to bulge forward until the short soft palate could meet it and completely close the nasopharyngeal passage); to cure incontinence of feces due to a fistula *in ano;* to narrow the inguinal rings in cases of hernia; and to remedy prolapse of the vagina. In the last named condition, however, the submucous projection caused by the paraffin is a contraindication unless there is no chance of the occurrence of pregnancy. The injections also proved useful in certain deformities, and excellent results were obtained in depression of the bridge of the nose, whether due to syphilis or injury, by filling the defect with a hypodermic injection of paraffin. After resection of the superior maxilla the sinking in of the cheek was removed or prevented by injecting paraffin. The amount of paraffin injected varied between a few cubic centimeters and 65 cubic centimeters. This large quantity was employed to raise the retracted skin and do away with the depression left after resection of several ribs. Paraffin may also be injected into joints to prevent the articular surfaces coming into too intimate contact if ankylosis is feared, or between the ends of nerves, in which a piece has been resected for neuralgia, to prevent their growing together again. The method is simple and safe.—*British Medical Journal,* Sept. 21, 1901.

ATROPINE IN INTESTINAL OBSTRUCTION.

H. Greble *(Münchener Medicinische Wochenschrift,* Aug. 13, 1901) reviews the literature of the treatment of intestinal obstruction by atropine. Dealing first with

obstruction of a paralytic or spastic nature, he finds that internal remedies are of use, and that the most common drugs employed are opium, atropine, and morphine. Apart from its quieting effect on the bowel, which is due to a paralysis of the nerve endings in the involuntary muscular tissue, atropine causes a regular and general distribution of the meteorismal pressure, and probably also a diminution of the intestinal secretion. Opium causes frequently severe gastrointestinal disturbances, and appears to act in direct opposition to the enemata which are necessary in these cases. Furthermore, atropine produces intoxication symptoms (delirium, excitement, difficulty in swallowing, etc.) very easily. The chief objection to the use of both drugs, the author says, is that they tend to mask the symptoms and to prevent a proper estimation of the progress of the condition from being made day by day. He therefore considers that morphine, which quiets the intestine without producing such lasting or severe effects as the other two drugs, is the best drug to employ in paralytic obstruction. But when one is dealing with mechanical obstruction, as in strangulation by kinking, twisting, by bands or pressure from without, there can be, in his opinion, no doubt that the application of atropine is a grievous mistake. To exemplify this danger of atropine treatment he quotes a case which has recently occurred in his practice.

A woman, seventy-two years of age, was taken ill with symptoms of intestinal obstruction—that is, complete suppression of flatus and feces, together with pain and vomiting. Later on the abdomen became tympanitic. Hydrostatic applications, enemata, etc., were tried, and on the fifth day of illness an operation was thought of. As a last resort atropine sulphate was injected three times (gr. 1-66 per dose). The pain, vomiting, and tympanites passed almost completely away, but no stool or wind passed. However, the practitioner attending her regarded her as saved, and waited until the ninth day, when all the symptoms broke out with renewed energy. She was then admitted into hospital, and Gebele operated as soon as possible. He found a coil of the small intestine gangrenous, and completely obstructed by inspissated feces. There was profuse fibrinous peritonitis. The patient was so desperately ill that his only chance was to perform an enterotomy, but in spite of a short operation, camphor injections, and saline fluid infusion, she died shortly after. He feels convinced that the operation might have been successful had it been undertaken on the fifth day.

The writer concludes by stating that for paralytic intestinal obstruction morphine is preferable to atropine, and for all other forms surgical interference is the only reasonable method of treatment, provided that simpler mechanical means have failed, such as enemata, olive oil taken internally, etc.

In the same journal F. PRITCHARD reports a case of obstruction due to gall-stone, which he believes was cured by atropine. The symptoms were typical and resisted treatment (carried out by the patient or his friends) by enemata, etc. Chlorodyne, hyoscyamine, and strychnine were given one after another, and then atropine sulphate and two ounces of olive oil were given. On the fourth day of illness the patient passed a copious stool, which contained a gall-stone of the size of a walnut.

ARONHEIM also reports a case in the same number. His patient was fifty-one years of age, and was said to be suffering from paralytic obstruction. There was no tympanites. Abdominal compresses (salt water, ice, etc.) and morphine were given, and enemata. Movements of the bowels were felt on the third day, but no wind or feces passed. The same day he ordered atropine, and had the satisfaction of hearing in the evening that a copious motion had been passed.

In the same number H. SCHULZ gives an interesting historical account of the belladonna and atropine treatment, to which we must refer our readers, as want of space prevents our publishing an extract of it.—*British Medical Journal*, Sept. 21, 1901.

SOME POINTS IN THE MANAGEMENT OF ECZEMA.

In the *British Medical Journal* of September 21, 1901, WALDO says that eczema should always be treated, and no attention should be paid to the doubts expressed by some as to injurious constitutional effects arising as a consequence of its cure; these are relics of the ignorance of the middle ages. To keep the part affected scrupulously clean would seem to be an important point. And especially is this the case if it be true that the majority of cases of eczema depend upon the action of microörganisms. Kaposi, however, is not of this opinion, as he says that it is of the utmost importance to realize the fact that the basis of eczema

is inflammation of the superficial layer of the skin, and that the various lesions occurring in its course—papules, vesicles, crusts, etc.—are merely the outcome of such inflammation. Furthermore, he says that eczema may be provoked at will in any part of the skin of any person by mechanical, chemical, or thermal stimuli; and he considers that this fact is strongly opposed to the theories of the parasitic origin of the disease. Nevertheless, the eczematous part must be washed in some way; for although no single parasite has yet been recognized as present in all forms of the disease and as capable of inducing eczema when intentionally transmitted from one individual to another, yet a large number of microörganisms can always be recognized upon an eczematous surface. Neither plain water nor soap, however, must be used. The harm done in many cases by using water is by allowing it to evaporate and so to produce cold, the resisting power of the tissues being at a low ebb. But it sometimes seems under any circumstances to act as an irritant, and it is a safer plan to cleanse the part with rain water, with the juice of bran, or starch or boiled oatmeal once every twenty-four hours. Immediate drying with a soft towel is recommended. The addition of a drachm of bicarbonate or biborate of soda to the pint is useful if there is much exudation in the form of crust. Some antiseptic fluid may also be added with advantage. This washing should be undertaken by an attendant, as an important point in treating eczema is to insure rest to the part. The sound parts of the skin should be washed daily with soap and water. By doing so the eczematous surface is much benefited. If an eczema is present on both arms or both legs, and it is decided to apply different applications to each limb, it must not be taken as a test of the relative value of the two agents, as one side always responds to a successful treatment of the other. It follows that a very important point is to clean and polish the general surface of the body which is not the seat of the disease, and so to take this sympathetic relation of the two sides of the body into account.

The eczematous surface should always be protected by some application. The kind of application is not so important as the protection of the par . If the attack is acute, apply soothing remedies. If stimulating applications are indicated, paint them on once or twice a day only. In the local treatment of chronic eczema begin by removing all crusts. When much exudation is present an oily covering acts well in removing it. If a parasiticide is thought necessary, it must be one that does not irritate. To a wet eczema it is often better to apply lotions, as in this way the local remedy is enabled to come into close contact with the living tissues.

Attention has been called to the local treatment first because it is considered to be by far the most important. But internal treatment must not be ignored. As Bulkley says: "No one can rightly deny the power of microörganisms to produce disease, for the results of aseptic surgery are incontrovertible, but there is great danger in connection with diseases of the skin lest local pathology lead to a neglect of the more important consideration of the soil on which the germs flourish." A striking illustration, he thinks, of the bearing of this remark is found in the change of opinion which has come over the medical world in regard to the relative importance of attention to the microbe in tuberculosis, as compared with the more important elements of the nutrition and hygienic condition of the patient. He thinks this points once more to the wisdom of the precept that it is often the patient who is to be treated rather than the disease by a specific name. Bulkley advocates the taking of milk in eczema, especially in neurotic eczema, and says the results will often be very striking. He considers it very important that the milk should be taken between meals. Dr. Waldo has ordered warm milk for years in suitable cases, but considers it should always be taken with meals. The stomach requires rest, and the only thing permissible between meals is water. Singularly enough Hutchinson some years ago thought that milk produced eczema. In many cases of eczema a blue pill is found to be very useful. Aperients play an important part in the internal treatment of many cases, and especially is this the case if the local disease is due to gout. This influence in eczema has been strongly contested by some authors, but Hyde, of Chicago, says the importance of gout as a factor, at least of the genital region, scarcely can be overestimated. Quinine is sometimes valuable, as, in addition to its other qualities, it has some control over pruritus.

If autointoxication is suspected there is no better intestinal antiseptic than benzonaphthol, which is odorless and tasteless.

Alcoholic beverages often aggravate

eczema, if it is at all acute; but in its chronic forms Dr. Pye-Smith considers that red wine taken with meals, and still more often porter, or, if this is not well borne, one of the lighter kinds of ale, is not only harmless but useful. He also says that for the marasmus we sometimes see along with general eczema in young children there is no drug so valuable as brandy. All alcohols increase the itching, which is often such a troublesome symptom. The majority of writers consider that alcohol, if taken at all in any stage of eczema, should be taken most sparingly.

In some forms of eczema a microbicide taken internally appears to assist in the treatment. Salicin is sometimes given with this idea.

The effect of diet upon eczema has been much discussed. Dr. Pye-Smith considers that "dieting" has been carried to an extreme and often a ridiculous minuteness. He believes excessive quantities of food and imperfect mastication are much more important causes of illness than special quality. He thinks that what most people eat is for most people wholesome, and what a natural appetite finds appetizing seldom disagrees. He further says that some kinds of eczema are certainly better for restriction of animal diet. With dietetics as with drugs the idiosyncrasy of the individual is a real and perplexing difficulty. As Dr. Walter Smith says: "In very many cases an intelligent and temperate patient knows, or ought to know, better than his doctor what suits him and what aggravates his complaint." Sir William Roberts's rule of conduct is worth remembering, namely, it may be regarded as certain that any food, or food accessory, the use of which is followed by a sense of discomfort, is not beneficial to that individual.

THE TREATMENT OF DIPHTHERIA.

The portion of Prof. SIMS WOODHEAD'S important report, a summary of which appears in the *British Medical Journal* of September 21, 1901, relating to the results of the treatment of diphtheria by antitoxic serum, suffers in interest from the fact that as its statistics deal with the experience of the Metropolitan Asylums Board during the years 1895 and 1896, they are partially superseded by more recent statistics, bringing out experience of the value of antitoxic serum more nearly up to date. Notwithstanding this drawback—the reasons for which are given in the report—the statistics given have a high and permanent value. As stated in the report, "they will form a standard of comparison for future work by which may be gauged improvements in treatment, and in the results obtained, that may be of inestimable value." The fact that the fatality for patients under five years of age declined from 47.4 per cent in the preantitoxin period to 31.5 per cent in 1895-6 is good evidence of the value of antitoxin, but the evidence for more recent periods is even more striking. Thus from the statistics for the Brook Hospital, given in the recently issued annual report of the Hospitals Committee of the Metropolitan Asylums Board, we find that in 1900 the fatality among 345 patients under five years of age was only 15.6 per cent. In cases requiring tracheotomy the improvement has similarly increased. From a fatality of 41.5 per cent under treatment by antitoxin during 1895-6, there is a decline to 33.7 per cent in 1900. Professor Woodhead's figures show the importance of early treatment by antitoxin. This is emphasized in the recent report of the Metropolitan Asylums Board. At the Brook Hospital during 1900, 854 cases of diphtheria were treated by antitoxin. Of these, 31 were treated by antitoxin on the first day without a single death; among 249 treated on the second day the fatality was 3.6 per cent; among 238 treated on the third day it was 6.7 per cent; among 161 treated on the fourth day, 14.9 per cent; and among 175 treated on the fifth or subsequent days it was 21.2 per cent.

CORRECTION OF OCCIPITOPOSTERIOR POSITIONS THROUGH SEIZURE OF THE ANTERIOR EAR BY TWO FINGERS IN THE VAGINA.

American Medicine of September 7, 1901, gives the following points in an article by DICKINSON:

To rotate the occiput forward the methods in vogue are:

1. Knee-elbow posture before labor or before head engages.

2. Lateroprone posture, on side to which occiput points.

3. Flexion; this accompanies every method.

4. Pressure with two fingers on the temple.

5. Seizure of the head in the hollow of the hand passed into the vagina.

6. Forceps, ordinary application.

7. Forceps, reversed.

8. High manual internal rotation.

Leaving out of account the most difficult cases and all impacted conditions, let us consider the means available for swinging the occiput to the front. The smooth and slippery head offers no sallies, projections, or handles within reach, save one only. To press on a temple or against the edge of an overlapping suture suffices in rare instances, but is ordinarily futile. To pass the hand in and grasp the head in the hollow of the hand is seemingly simple, but in practice not often of use. Until after natural or manual dilatation of the cervix, with a small and rigid introitus, or with a fixed head, the full hand grasp is unavailable. The forceps work well, gently used, in skilled hands. The inexpert may readily do damage with them, but through explanation of the dangers and of the right methods to the student, in his mannikin courses, they will save some accidents. Forceps-grasp is hand-grasp, bettered.

As between high manual internal rotation and version, the former has always been the writer's choice. By passing the fingers to the posterior shoulder and making sure that the body rotates to nearly the same extent that the head does, and by overcorrection (rotation through a half circle), a case can be treated with less contusion and strain for the child and less chance of laceration of the mother's passages than by version. Indeed, the head once engaged with the occiput forward, and brought well down, the rest can often be left to the natural forces. Each, however, will choose the procedure in which he feels himself most at home.

A simple method, always worthy of trial and often successful, is the seizure of the ear and the exertion of pressure or traction to turn the head. The maneuver is available whenever the ear is within reach. Two fingers are pushed in beneath the pubic arch and the ear caught between their tips. The middle finger, being longer than the index, would be better placed against the back of the ear if the reach is a long one, or the patient stout or sensitive. The index, however, with its greater strength, has more pushing power when its tip lies behind the ear. But whether one finger or the other goes to the mastoid side of the ear is not material, nor does it matter whether palmar or dorsal aspect of the finger is applied to the head. Palm toward pubes gives the longer reach. The cartilage of the concha furnishes a resisting projection on which pressure is exerted, or the flap of the ear gives a handle to pull upon. During a pain that rotation which has been gained is held, and progress is resumed after the passing of the pain. It is the author's practice to overcorrect except when the head is on the pelvic floor, or when the descent is rapid—that is, if the head is engaged, or midway in the pelvis in an R. O. P. position, it is turned to L. O. A., provided no undue resistance suggests torsion of the neck. Then one expects the untwisting of the trunk to draw the head back to R. O. A. It goes without saying that flexion must be maintained or faulty flexion corrected, and also that the chin must not be swung around beyond the shoulder (the acromion). In attempting the swing through the half circle, that shoulder which is above the pubes must give assurance to the operator that the trunk is swinging with the head. The lateroprone position across the bed sometimes proves advantageous.

The anterior ear offers a better purchase for rotation of the occiput forward than any other simple method, whenever it is within reach.

POSITION OF THE WOMAN DURING DELIVERY.

PORTER tells us in the *Journal of the American Medical Association* of September 7, 1901, that it has for years been his invariable custom to deliver in the following position: The woman lies on her back across the bed, her hips well to the edge, and on a Kelly pad, so arranged as to carry fluids into a vessel on the floor.

For this purpose the small square pad is most suitable. The patient's legs are separated and extended. They are supported by assistants, by a couple of suitably placed chairs, or preferably over the knees of the obstetrician, who sits on a chair facing the bed at a convenient distance. The patient should wear her stockings, her thighs should be enveloped in clean towels, and she should be covered with a sheet. This position is maintained from the end of the first stage until the termination of labor, unless the second stage be tedious. In that event the patient can resume her ordinary position in bed, to be again brought into the position described before the end of the

second stage. The position is not tiresome to the patient or physician, and can be maintained for hours without discomfort to either.

The first thing after placing the woman in this position is to have the nurse thoroughly cleanse the external genitals and inner surfaces of the thighs with a generous application of soap and hot water, followed by an antiseptic solution. This should, for obvious reasons, be a routine procedure, irrespective of previous preparation. It corresponds to the final preparation of the site for a surgical operation. It is claimed for this position that with intelligent management the parts so cleansed will not be infected during the labor. In case fecal matter escapes during a pain, it gravitates at once to the vessel on the floor, and all traces which could offend the sense of sight or of smell are swept into the vessel by the free application of an antiseptic solution. The maintenance of a fixed position is unquestionably favorable to asepsis. The patient is less likely to contaminate the parts than if she were permitted to frequently shift her position. The physician can much more certainly keep his hands clean than if he were compelled to move about to accommodate himself to the changing position of his patient. He is constantly prepared to render assistance, and thus avoid the too common blunder of managing the termination of labor with hands improperly cleansed, on account of haste at the last moment.

This position also reduces the number of vaginal examinations. The examinations usually made from time to time by the accoucheur, that he may be apprised as to the probable termination, are not necessary. Within reasonable limits the time makes no difference, as the position insures constant readiness on his part.

This position, better than any other, insures control over the advance of the head as it is about to emerge. In the ordinary condition the degree of control is by no means satisfactory. Unless anesthesia be profound, the woman is likely to toss about at the critical moment. This often results in a needless degree of laceration. The position advocated eliminates this unfavorable element. The patient, unable to secure points of resistance for her, cannot change her position. The obstetrician is in complete control, and can delay to the most favorable time the delivery of the head, and can manage accurately the rate of advance when it is delivered.

When delivery occurs, first the head and then the body is grasped, and the child is carried up over the pubes. The nurse places the blanket, in which the child is to be wrapped, across the abdomen and pubes of the mother. On this the child is placed transversely and low enough to permit of ready manipulation of the uterus. This avoids the danger to the child of infecting the eyes or cord with fecal matter, and there is less liability that it may aspirate fluids into the air-passages. Before the child is moved the cord is dressed and the dressing secured by a binder. To allow quite an interval to elapse between the cutting and the dressing of the cord, with the possible danger of infection, is an unsurgical procedure. The facility afforded by this position for the delivery of the placenta and for the detection and repair of perineal laceration needs no comment.

Of no very slight importance is the ease with which the patient can be cleansed at the termination of labor. No other position permits of such free use of water. If ordinary care has been used, the woman is clean and her garments and bedding spotless.

We have been considering that small minority of patients who live in well appointed homes and command the services of the trained nurse. The vast majority of child-bearing women are unable to secure these safeguards. The membership of the lower classes is prolific as well as numerous. Living, as they do, in cramped quarters, the bath-tub an unknown luxury, it would be unfair to expect a high standard of household or personal cleanliness. In isolated cases the housewife rises superior to her surroundings and is a model of neatness and cleanliness. She is the bright exception to the general rule of dirt and disorder. If the woman of this class is able to have in readiness, at the time of her labor, a change of linen for her bed and a few clean towels, she feels entitled to credit. She probably depends for nursing on some member or friend of the family; or much worse, on a so-called nurse, but one without training, and whose ignorance of asepsis is equaled only by her assurance, and her readiness to act on her own initiative, and in defiance of instructions. In this class the young physician, struggling to make his way, finds most of his obstetric work.

Should he choose the usual position for delivery, his examinations are fraught with danger. Bedding and patient are likely to be in a sorry plight at the end of labor, and the chances are that these conditions will continue during the lying-in period.

If he adopts the position herein recommended he needs only soap and sterilized water to insure safety to his patient. A liberal application of soap and the use of a large fountain syringe of hot water, followed by an antiseptic solution, comprises a ready means of cleansing the external parts. If necessary, this can be done by the physician, and there is need of little or no exposure. If he will exercise the forethought to sterilize forceps, ligatures, sutures, needles, scissors, etc., and place these within convenient reach, it will be unnecessary for him to leave his chair until the labor has terminated and every necessary detail has received attention. He is in complete control of the situation and protects his patient from infection in the most unfavorable surroundings.

Incidentally, in an emergency such as postpartum hemorrhage, this position is advantageous. There is necessarily a prompt notification of the danger, and the woman is already in the most favorable position for treatment. Moreover, the young physician will find the position the best for studying the mechanism of labor.

In conclusion a brief recapitulation embraces the following claims for this position:

1. There is less liability of infection with fecal bacteria.
2. Fewer examinations are necessary.
3. There is better control of the head at the time of delivery, and consequently less danger to the perineum.
4. The woman can be more thoroughly cleansed after labor, and clothing and bedding are not soiled.
5. There is less danger of infecting the eyes or cord of the child, and less risk of its aspirating fluids into its air-passages.
6. In managing cases in the unfavorable environments of the lower classes, the position is especially valuable to the young physician, whose experience is gained largely among these classes.

CONSERVATIVE OPERATIONS UPON THE UTERINE ADNEXA.

Although he believes that the sexual organs are of no benefit to the possessor so far as promoting physical vigor or increasing longevity are concerned, BYFORD *(Medical News,* Oct. 5, 1901) thinks that there are many reasons for preserving them. Women prefer, as a rule, to suffer with unhealthy organs rather than have them removed, and the prejudices of society are such that it is an unfortunate thing for a woman not to be able to retain her sexual organs. Byford, therefore, considers it his duty to preserve sufficient ovarian tissue for normal function in women under forty years of age, even at the risk of a subsequent castration.

He describes two cases that are representative of many others. He notes also that Dudley has reported a number of operations for pyosalpinx, and that he was encouraged by the pioneer work of Dudley to extend his conservative operations to adherent and occluded tubes.

The first case he was called to see was Miss H., and found her in bed. She had been in broken health for a year or more, and had taken local treatment and the rest-cure without benefit. Her local symptoms were dysmenorrhea and pelvic pain. A consulting gynecologist of wide experience had recommended removal of the ovaries and uterus as the only means of getting her out of her deplorable condition. Byford found double oophoritis, a small cervix, and moderate uterine hyperplasia. He dilated the cervix, curetted the uterus, made a peritoneal incision through the posterior vaginal fornix, and removed about two-thirds of each ovary, leaving only what appeared to be healthy tissue. The patient recovered promptly, married in a year, and has been well and hearty since that time. In another case Byford did an abdominal section in a married woman, and found both tubes occluded. The right tube contained cheesy matter, and its walls were thickened and hardened from interstitial inflammation. The left tube contained a little turbid mucus. The left ovary contained a hematoma the size of a walnut. The appendages of both sides were extensively adherent. Byford separated the adhesions, removed a large part of the right ovary, opened the fimbriated extremity of both tubes by incisions, and sutured the mucous to the peritoneal coat to insure permanent patency. The contents of the tubes were pressed out, and the cavities syringed with sterile water. The peritoneal cavity was closed without drainage. The patient walked about the room at the end of three weeks. Her immediate re-

covery was about as rapid and complete as in those cases in which the ovaries and tubes were removed *in toto*. She has continued well since the operation (February, 1900), and complains of no symptoms of any kind.

Severe septic cases of disease of the uterine appendages with habitual elevation of the body temperature, frequent acute attacks, large accumulation of pus, and complete disorganization of the tubal walls and ovarian structures, should not, according to Byford, as a rule be treated in a conservative manner. Eliminating severe septic cases, there is a very large majority of cases left in which the patient can be assured that the diseased tissue can be removed or treated without interfering with her sexual functions or vigor.

TREATMENT OF STRICTURE OF THE ESOPHAGUS.

Some procedures apparently successful have been devised by DUNHAM *(Boston Medical and Surgical Journal,* Aug. 29, 1901) for the treatment of cicatricial stricture.

In a case where he could not pass an instrument either from above or from below, Dunham overcame the difficulty in this way: He threaded an ordinary water tube so that the end of the thread was at the mouth of the tube. The patient then drank water through the tube. The thread was washed along in the current of water, and as it disappeared up the tube more thread was fed into the glass of water. When several feet of thread had thus been washed down, the lower end of the thread was fished out from the stomach by passing a bent probe into the gastrostomy opening. The first attempt was successful, but during later attempts the child snarled the thread with his tongue, preventing the washing down of the thread. The new difficulty was overcome by using a glass funnel to which was attached a piece of rubber tubing. To this tubing was attached, by glass tubing, a small rubber catheter, the tip of which had been cut off. A thread was washed down from the funnel until its end appeared at the end of the catheter. The rubber tubing was now pinched to stop the flow of water and thread, and the catheter inserted into a nostril until its end hung in the pharynx. A swallow of water was now allowed to flow from the funnel, and then the tube was again pinched. Water was thus intermittently fed down the esophagus, the thread going with the stream. After several feet of thread had disappeared down the funnel, the lower end of the thread was fished out through the gastrostomy opening as before.

To avoid the dangers of attempting to dilate by forcing down the usual conical bougies, Dunham devised an instrument, which he has used with complete success, by means of which the idea of cutting a stricture with a string can be carried out by working entirely from above without opening the stomach. The instrument consists of a stout staff of whalebone, to the end of which is screwed fast an olive-shaped piece of metal. The olive-shaped metal piece is pierced by two tunnels: one is a curved tunnel having its convexity toward the end of the instrument and its two ends opening opposite one another well forward of the greatest diameter of the olive. This curved tunnel is accomplished by making two borings that meet at an angle. The sharp crest where the borings meet is smoothed down by boring through a string covered with wet emery powder. Unless the metal is thus smoothed, the cutting string will itself be quickly chafed in two.

The second tunnel begins at the base of the olive, to one side of the screw, which attaches it to the whalebone staff, and, passing diagonally through the olive, ends at its tip. This tunnel may be called the guide-tunnel. The instrument is held to its course in the esophagus by what Dunham calls a guide-bougie. This consists of a urethral bougie cut off to a length of seven to eight inches. A steel wire passes through the lumen of the bougie. One end of the wire terminates in a metal tip at one end of the bougie. Where the wire emerges from the other end of the bougie it is soldered to a metal tip on the bougie and then extends beyond it some three feet. To shield the soft parts of the pharynx from the scraping of the string while cutting, Dunham made a guard to hold the strings close to the whalebone staff. This guard consists of a handle to which are soldered two wires. These wires run along the whalebone staff and carry three wire loops encircling the whalebone, by means of which the guard may slide along the staff. The wires also carry two sets of lateral eyes, in which the cutting strings may play to and fro. The strings are thus held away from the soft parts.

The method of using the instrument is as follows: An olive a little larger than the

stricture is screwed to the whalebone staff. The two ends of the string which passes through its string tunnel are threaded through the eyes of the guard. If the patient be a child, he is best seated in the lap of an assistant, with the shoulders resting against a pillow in front of the assistant, and the head thrown back over the top of the pillow, the mouth held open by a gag. A guide-bougie is chosen of such size that it will readily pass the stricture. It is introduced until all but the wire has disappeared behind the epiglottis. The end must then be in the stomach. As no force is required in passing this guide-bougie, it cannot make a false passage. The wire of the guide-bougie is now threaded through the guide-tunnel of the olive, and the olive slid along the wire until its tip comes in contact with the bougie part of the guide-bougie. By pulling upon the wire and pushing the staff, the guide and olive become now virtually one instrument. As the guide is necessarily in the esophagus, the olive must follow it and cannot make a false passage, even if a fair amount of force is used. One thing must be guarded against—kinking the wire where olive and bougie meet, by failing to direct the staff toward the esophagus, while the olive is still in the larynx. Attention to the position of the patient and proper handling of the whalebone staff will prevent this from happening. When the olive is arrested by the stricture, the guard is slid along the staff until its end is beyond the epiglottis, and then an assistant pulls the string to and fro, pulling parallel to the staff to make as little friction as may be. Moderate pressure is made upon the staff, which causes the olive to put the stricture on the stretch, and the strings cut a passage for it. As the olive descends, the guide-bougie coils up in the stomach. Owing to the slight force required to coil the bougie in the stomach, the olive may not, when it has cut through the stricture, plunge suddenly into the stomach. It is not, therefore, safe to wait for a sense of lessened resistance as an indication that the olive has passed the esophagus. The safe plan is to mark the bougie at the point which should be at the incisor teeth when the olive is in the stomach. For a child of two years ten inches should be right.

Bougies that are passed subsequently at intervals to guard against new contractions are hollow and can be passed on a guide. They are ordinary gum-elastic bougies, with the ends cut off and a perforated conical metal tip screwed on. Dunham pulled a wire from the stomach wound up through the mouth, and using this as a guide slid these hollow bougies down the esophagus until their tips appeared on the abdomen.

CEREBROSPINAL FLUID AFTER COCAINIZATION OF THE SPINAL CORD.

RAVAUT and AUBOURG *(Gaz. Hebdom. de Méd. et de Chir.,* No. 51, 1901) say that the cocainization of the spinal cord often causes headache, vertigo, and vomiting, and that in order to diminish the intensity of this headache they have practiced, some hours after the operation, a new lumbar puncture, in the hope of relieving the patient of a certain amount of cocaine which is free in the cerebrospinal fluid (as has been proved by chemical examination), and also to diminish the increased tension of this fluid. As a general rule it may be said that the headache disappears or diminishes after this second puncture. It has also been noted that the greater the headache, the greater the tension of the fluid, and the more turbid it is found to be.

In the cases of very severe headache, the authors withdrew as much as 20 cubic centimeters of turbid fluid, which spurted out in the larger number of cases. In cases of very mild headache, the liquid was clear, flowed drop by drop, and only a small quantity was withdrawn. The histological examination of the fluid withdrawn showed that the polynuclear leucocytes were most abundant in the most turbid fluids, which, after standing for some hours, or on centrifuging, would contain a large layer of corpuscular elements at the bottom of the tube. Sometimes the inflammatory reaction was sufficiently intense to determine the formation of a fibrinous coagulum on allowing the fluid to stand for some hours. The number of polynuclear leucocytes and the amount of fibrin seemed in all the cases to bear a distinct relation to the degree of intensity of the headache, and in twenty-one cases in which the examination of the cerebrospinal fluid was made, some hours after the anesthesia, in only one case was this fluid found to be absolutely normal.

Further examination of those cases in which the reaction to the anesthetic had been most intense showed that on the third or fourth day the fluid became more clear, the polynuclear leucocytes were not so

numerous, and were replaced by lymphocytes and mononuclear leucocytes; and in from eight to twenty days, on an average, the fluid was again perfectly normal. These facts coincide with those that have been noted in cases of acute meningeal affection that recover; at the onset of the infection the polynuclear leucocytes are present in large numbers, but as the patient recovers the polynuclears disappear, and little by little they are replaced by lymphocytes, and finally the fluid again becomes normal. The cocaine is the direct cause of this leucocytic reaction, and its action upon the membranes of the cord may be compared to that of a toxin, which fully explains all the phenomena that have been observed.

From the clinical point of view the headache is only the manifestation of these modifications in the cerebrospinal fluid. Careful investigation has shown that at times there is a very intense reaction at the onset of the anesthesia, which varies with the susceptibility of the individual, diminishes rapidly in intensity, and so should not be a source of anxiety. It is of interest, therapeutically, to investigate and show the reaction of the meninges against cocaine.

COMMON FORMS OF RENAL TUBERCULOSIS AND THE INDICATIONS FOR NEPHRECTOMY.

LEGUEU *(Annales des Mal. des Organes Genito-Urinaires,* No. 6, 1901) says that patients affected with renal tuberculosis may or may not present themselves with the symptoms of a marked cystitis. In those cases in which there is no cystitis the patient's attention is attracted to his condition by more or less trouble with his urine, or, more often, by attacks of more or less severe pain in his side in the region of the kidney. This pain is sometimes colicky, coming on in crises. Finally there may be a swelling in the lumbar region, which, on examination, will prove to be a kidney tumor. Changes in the urine are constant in the course of renal tuberculosis; the change that is never absent is pyuria, which presents its particular characteristics. It comes on spontaneously, is lasting, and appears without appreciable cause.

It is extremely difficult to find the tubercle bacillus in the urine of these cases. Repeated examinations often give negative results. In doubtful cases it is best to definitely determine the diagnosis by the inoculation of guinea-pigs. Blood is sometimes noted in the urine, but the hematuria in the course of renal tuberculosis is rare and variable. As a rule, some may be noted from time to time, or very rarely there may be a profuse hemorrhage. Pain varies in its duration and in its intensity. It may be so mild and so infrequent in some cases as not to be noticed, while in other cases it may be so severe, and the attacks so frequent, as to simulate a severe nephritic colic like that of calculus. Those cases in which there is a distinct renal tumor are always accompanied by pyuria. In cases in which there is cystitis, the patients complain of frequent desire to urinate, painful micturition, and pyuria; the first two of which are undoubtedly reflex symptoms from the diseased kidney. Catheterization of the ureters should be performed in every case, not only to aid diagnosis, but also to accurately determine the functional value of the other kidney.

Every possible means should be taken to exactly determine the state of the healthy kidney before operation is even thought of. Nephrotomy is indicated only in those cases in which there is retention or where the kidney on the opposite side is so diseased as to make nephrectomy impracticable. Nephrectomy is indicated in those cases in which the disease is progressing, where there are evident symptoms of involvement of the ureter of the infected kidney and perhaps of the bladder, with the prospect of an ascending infection of the other ureter and subsequently of this kidney. It is also indicated in those cases where the tuberculous kidney is seriously affecting the general health. The author says that it is his practice to reserve nephrectomy for cases where the disease shows signs of progression, where the patients are losing weight, where there is more or less hemorrhage, and, finally, severe pain. The contraindications to nephrectomy are functional alteration in the opposite kidney, whether of tuberculous origin or not. Tuberculosis of the lungs or bladder is not a contraindication. Vesical tuberculosis is not only not a contraindication, but experience has shown that these cases are much benefited by the operation for the reason that there is no longer a steady flow of tubercle bacilli into the bladder, which will now become amenable to proper local treatment. The same is true of cases of pulmonary tuberculosis; as soon as the infected kidney is removed, the patient at once begins to gain. The lumbar

route is the one of choice, and the operation should present no difficulties. Unless the ureter is markedly diseased, it is best not to remove it, as it will undergo atrophy and obliteration.

In conclusion it may be said that the benefits of the operation are immediately felt; the greater the lesions of the kidney and the more the disease is advanced, the greater the benefit which is rapidly manifested. The appetite returns, and in all cases the patients improve rapidly.

ATTEMPT TO SIMPLIFY THE TREATMENT FOR FALSE-JOINT.

COLLEY *(Centralblatt für Chirurgie,* June 29, 1901) reports the case of a man who presented himself for treatment with non-union of the radius and ulna at the center of their shafts, as the result of fracture. He had been treated for some time by absolute rest of the parts in a cast, but with no success. Fearing that some malignant neoplasm was the cause of the non-union, the author cut down upon the seat of the fracture, but found no evidence of any pathological change. There was not the slightest evidence of callus, and the fragments were much splintered. As the result of this slight interference the patient developed a marked case of delirium tremens, repeatedly tore off the dressings, and so infected the wound, which finally healed. As a last resort the author made a solution of bone-ash, from the femur of a cow, mucilage, gum arabic, and distilled water. After sterilizing, this was injected by means of a Pravaz syringe into the area of non-union. After the sixth injection there was every evidence of good union, and shortly afterward the patient was discharged cured.

GALVANIC TREATMENT OF GONORRHEAL ARTHRITIS.

MATHIEU *(Gaz. Hebdom. de Méd. et de Chir.,* No. 53, 1901) says that he has tried the galvanic method of treatment in six cases comprising thirty articulations seriously affected with gonorrheal arthritis, with and without periarticular swelling. The two electrodes are so fixed that the current will traverse the joint with an intensity varying between 20 and 50 milliamperes, the strength depending on the case. The duration of an application should be fifteen minutes. On the first day two applications may be given, but after that once a day is sufficient. The effects of this treatment are most remarkable. The symptoms are markedly decreased in from two to three hours after the first application, but the improvement is even more marked on the next day; the patient passing a good night. The pain is markedly decreased. The affected joint is less swollen, and its mobility is in part reëstablished. Recovery follows after from two to six applications; in one case it required fourteen applications for it to become complete. After recovery there is neither the atrophy of the muscles nor limitation of motion of the joint that is so frequently a sequel. Experiments have proved that the faradic current does not give nearly so good results as the continuous one.

SURGICAL TREATMENT OF ASCITES IN CIRRHOSIS OF THE LIVER.

MONGOUR *(Gaz. Hebdom. de Méd. et de Chir.,* No. 56, 1901) says that instead of the old operation of palliative puncture the operation of to-day is the curative one of fixation of the omentum, and which aids the reëstablishment of the portohepatic circulation and favors a collateral circulation between the branches of origin of the portal vein and the branches of origin of the inferior vena cava. The operation consists essentially of a median laparotomy and the fixation, extra-peritoneally, of the omentum against the muscles of the abdominal wall. Adhesions rapidly develop, new vessels form, which assure the return of the portal blood into the vena cava without excess of pressure, and, as a result, without the production of ascites. The author reports two cases, the first of which may be considered as an operative success but a therapeutic failure, while the second case was an absolute failure in every way.

The known seventeen cases were operated upon with the following results: Died some days or hours after operation, five cases; not improved, three cases; improvement doubtful, four cases; recovery, five cases. The results are not a strong argument in favor of this operation, which is a serious one, by reason of the condition of the patient, who is incapable of modifying his nutrition, and is susceptible because of inhibition of an essential organ that has partly lost its function. This operation should not be deemed one of necessity, for simple puncture suffices to relieve, without danger, all the more pressing indications. In order to

judge of its value, nothing is more suggestive than the risks which one must run for the operation to be successful.

The author says in conclusion that, after long reflection and impartial study of the statistics, one should be guarded in recommending an operation of this nature, which is capable of precipitating the destruction of the liver, and he has decided never to perform it again.

SURGICAL INTERVENTION IN ACUTE AND CHRONIC NEPHRITIS.

POUSSON *(Gaz. Hebdom. de Méd. et de Chir.*, No. 49, 1901) says that he has operated in four cases of nephritis. The infection in two of the cases was secondary to a general disease; in the two others it was secondary to disease of the bladder. In two cases he practiced nephrotomy, and the patients were still healthy; one three and one-half years after operation, and the other after seven months. In the other two cases nephrectomy was performed, with one operative recovery, but death ensued four months later from infection of the other kidney. To these four cases the author adds eleven others collected from literature, a total of fifteen cases with four deaths, or a mortality of 26.66 per cent. Nephrotomy should be the operation of choice, because it has a lower mortality than nephrectomy, it enables the operator to destroy *in situ* the pathogenic agents, and finally it does not deprive the patient of the service of one of his kidneys.

The author has operated in three cases of chronic nephritis: the first case was one of marked nephritic hematuria, and was most successful, the patient still being alive and in good health three years after the operation. The other two operations were performed for the relief of alarming symptoms of uremia. In these two cases the phenomena of intoxication, in consequence of the oliguria and the failure of the kidney to excrete, were momentarily stopped by the nephrotomy, but were observed again after the closure of the incision in the kidney. In the first case a secondary nephrectomy had to be practiced before the symptoms definitely disappeared.

In view of these facts the author states in conclusion that in certain affections of the kidney the insufficiency of the kidney to properly clarify the blood becomes a formal indication for nephrotomy or nephrectomy. As in the surgery of the liver, which tends to-day to attack its chronic affections, as cirrhosis, the surgery of the kidney should extend and include in its limits chronic nephritis, or the anatomical substratum of Bright's disease.

BLOOD CHANGES PRODUCED BY ADMINISTERING ETHER AS AN ANESTHETIC.

DA COSTA and KALTEYER *(Annals of Surgery*, September, 1901) carefully review the literature on this subject and mention the views advanced by Snow, Sanson, McQuillen, Mikulicz, Garrett, Oliver, Fish, Buxton, Von Lesher, and Bloodgood. Some of these writers maintain that ether acts as a hemolytic substance, while others believe it does not. The authors have clearly demonstrated that the anesthetic state, the period preceding, and that following, produce blood concentration. The conditions that bring about this blood inspissation have probably misled preceding investigators in their conclusions. The authors show that the relative polycythemia is not accompanied by a proportionate increase in the percentage of hemoglobin. The percentage of coloring matter never increases so much as the corpuscular percentage; often the hemoglobin percentage falls, and consequently a decrease in the individual corpuscular richness in hemoglobin follows.

In the authors' experiments records were kept of the approximate amount of the ingestion and excretion of fluids of the body in order to determine the conditions responsible for blood concentration. In addition, experiments were made on two rabbits. One of these rabbits was etherized for two hours and twenty minutes, one hundred and fifty cubic centimeters of ether being employed during the anesthetic period. The animal was then killed with ether. During the etherizing there was a rise in the percentage of corpuscles and a fall in the color index. The other rabbit was killed by fracturing its spine. The bone-marrow of this animal was compared with the marrow of the etherized animal. A marked cell proliferation, involving particularly the erythroblastic elements, was observed in the marrow of the etherized rabbit. The authors state that they hesitate to draw any conclusions from this single observation, but nevertheless the very notable changes that were found suggest ery-

throblastic proliferation as a result of the ether. In the light of this experiment it might be well to inquire whether the pains in the back and limbs, so common after etherization, are not due, at least in part, to changes in the bone-marrow. The authors base the following conclusions on the results of fifty blood examinations made in the Jefferson Medical College Hospital:

1. The number of red corpuscles is influenced by many factors associated with and accompanying the anesthetic state. The character of this change is, as a rule, a polycythemia; rarely, an oligocythemia. These factors associated with and accompanying the anesthetic state may be grouped into three classes. In each class, when analyzed separately, is found a cause capable of producing an increase in the number of colored corpuscles.

2. The nature of this polycythemia seems best explained by a lessening of the watery elements of the plasma, thereby reducing the total volume of the liquor sanguinis, and consequently causing concentrating of the blood. It seems reasonable to infer that the polycythemia is not influenced by excessive proliferative changes, which probably occur in the hematopoietic tissues. The increased blood production is an effort of nature to rapidly restore the destroyed cells.

3. The three important factors incident to the polycythemia are: (*a*) The period of preparatory operative treatment; (*b*) the anesthetic state; and (*c*) the postoperative stage.

4. The blood inspissation is, as a rule, most pronounced immediately after the termination of the anesthetic stage. In some instances the anhydremia may be increased by each succeeding factor, or one of these factors may exceed the other; for example, the preparatory measures may bring about such a high grade of concentration that during the anesthesia the polycythemia may be stationary, or in a few hours may lessen somewhat. This variation existing between the plasma and the corpuscles, although temporary (for the economy adjusts the balance of the output and the intake of the watery principles of the blood with wonderful rapidity), should be regarded as too pronounced to be within the physiological limits. The relative increase in the number of erythrocytes is generally still present some time after the operation. But not infrequently the adjustment of the watery and solid elements manifests itself before this time, and an oligocythemia may be present.

5. The hemoglobin is always reduced absolutely; in some instances there is an apparent increase, but this rise in the percentage of hemoglobin is never parallel with the rise in the number of red blood-cells. The individual corpuscular hemoglobin value is therefore reduced. This reduction in the color value of the chromocytes is most striking when the color index, ascertained some time before the operation, is compared with the blood decimal, determined some time after the operation. We must conclude that etherizing produces increased hemolysis; and in nature's effort to rapidly replace the destroyed corpuscles the regenerated cells are imperfectly supplied with hemoglobin.

6. The duration of the anesthetic state and the amount of ether may influence the blood changes; but the extent of the disturbances could not be determined on account of the many modifying factors.

7. The amount of blood loss, as encountered in this series of cases, does not seem to affect the blood.

8. Whenever possible, one or more blood examinations should be made before giving a general anesthetic; and the examinations should be made before preparatory treatment has been instituted. On account of the hemolysis, which is shown by the fall in corpuscular hemoglobin after operation, a very low percentage of hemoglobin must be regarded as a contraindication to the administration of a general anesthetic. The amount which should be regarded as a positive contraindication is uncertain. The authors think, with Hamilton Fish, that below fifty per cent is a dangerous level. In malignant disease, and in cases where surgery might prolong life briefly, but cannot cure, operation should not be performed under a general anesthetic if hemoglobin is below fifty per cent. They have operated in two cases in which the hemoglobin was forty per cent; in each instance a vital emergency existed; and in each case death upon the table was narrowly averted.

Mikulicz sets thirty per cent as the lowest level at which operation is to be attempted. We must not give a general anesthetic except under the stress of absolute necessity, if the hemoglobin is below forty per cent. It is true that cases are occasionally anesthetized with success when there is less than forty per cent; the au-

thors know of one case with thirty per cent, and another with twenty-four per cent; but a few exceptions do not disprove the rule. If there is a low percentage of hemoglobin, local anesthesia should be employed whenever it is possible. Whenever the percentage of hemoglobin is low, if an operation is determined on, the ordinary preparatory measures should be modified in every way, in order to avoid creating an undue drain upon the blood. If a general anesthetic is used, its administration should be entrusted to an experienced man; as little as possible should be given; in many instances oxygen should be combined with it; the operation should be performed rapidly; proper measures should be taken to bring about reaction after its completion; and oxygen should be inhaled to quickly remove the ether from the lungs and blood.

IRRATIONAL TREATMENT OF THE CANCEROUS MAMMA.

The mammary cancer, the familiar scirrhous carcinoma, secondarily infects the lymph glands within twelve weeks of inception, often within six weeks There are, of course, some exceptions. Mammary carcinoma shows remarkable variations in virulence, and in a few atrophic cases the infective processes are materially delayed. The whole subject of cancer, says Snow *(West London Medical Journal,* October, 1901), is extremely complicated, and it is impossible to make an all-inclusive dogmatic statement on any single point connected with it. Still, the above is the rule.

The mamma is situated between the two sets of lymph glands; one wholly concealed, the other freely exposed to view or to manipulation. Under the sternum lies the residual thymus, a lymph organ never wholly obliterated; and in close juxtaposition are the mediastinal lymph glands. A scirrhus commencing at the sternal margin of the mamma infects these structures at a very early period, some time before there is any axillary deposit. A cure by surgical measures is then obviously impossible, though much can be done after an operation to keep the disease in check by medicinal treatment. Evacuation of the axilla is not always advisable in such cases.

But in the remainder the lymph glands in the corresponding axilla first receive the infection, in the progress of which three stages may be described: (1) A latent stage, occupying several weeks. (2) Tenderness on pressure without enlargement; this covers about a fortnight usually. (3) Palpable increase in bulk, which, however, especially in the fat, may not be ascertainable before operation.

Directly the increase in bulk takes place, the lymph flow is impeded; it tends to flow in unusual directions, and even to regurgitate. Finally there is complete stasis, all the channels through the glands becoming filled with the proliferating cancer cells. Some of the lymph, carrying with it nuclear fragments of cancer protoplasm, regurgitates into the marrow of the adjoining humerus, and there deposits these particles, which then slowly increase and multiply. But they, as far as Snow has seen, never give rise to any symptoms until a year has passed since the beginning of the disease.

Within the second year the patient begins to complain of gnawing pain in the bone mentioned, with also neuralgic darts in the scapular region. On examination, the upper third of the humerus is tender on pressure and feels slightly enlarged. But this is all. Snow has not met with either a tumor or a fracture in this bone; though the latter has certainly happened, and there are specimens in the museum of the Royal College of Physicians.

In the second year is developed what Snow ventures to describe as "the sternal symptom" of insidious marrow infection. The sternum shows a marked bulge at the junction of its upper and middle parts. There is tenderness on pressure and sometimes darting pains in the neighborhood; but the patient seldom complains or even notices the slight prominence. There is often a natural protuberance here; only when there is a progressive development under observation is this condition of pathological importance.

The sternal symptom is due to deposit within the underlying thymus and subsequent infiltration of the bone. Snow has seen it give rise to a prominent bossy ulcerating tumor some five or six times. As a rule it remains wholly insidious.

There is another important yet merely subjective symptom, beginning in the third or fourth year—the gnawing lumbar pains, well known in advanced cases. This denotes actual deposit within the cancellous tissue of the lumbar vertebræ. It signifies infection of the blood, necessarily following on the association of the marrow with the general circulation.

It is utterly impossible, says Snow, for Halsted's operation to effect a radical cure

of the long-standing cases of cancer for which it is invoked. Further than this, it does nothing to prolong life, but often shortens it by the inevitably lowered vitality which it involves. Chronic, widely distributed deposits are often compatible with much longer life than a solitary growth rapidly advancing in a comparatively youthful and vigorous patient. The invalidism of the former class makes really for their advantage; and when a mammary cancer becomes distributed over the whole body, or nearly so, a sort of tolerance is established. Operative interference, except, perhaps, of a very limited nature, undertaken with the object of preventing an ulcer, actually does harm. Once get these sufferers under the influence of opium in moderate doses—there being present no open sore—and the tenacity of life they exhibit is amazing.

As to the objects and limits of operation on the cancerous mamma, there should be first a selection of cases, and by no means should there be an operation at all hazards. If the cancerous breast can be medicinally treated from the beginning with full doses of opium without operating, ulceration can generally be prevented, and the disease can be compelled into an atrophic stage, permitting years of fairly comfortable health.

If, on the other hand, there be previous ulceration, that will forcibly militate against opium treatment. The only advantage of an operation upon these advanced cases is the preventing of the open sore.

Snow's experience confirms him in the belief that it is an error to remove supraclavicular glands under almost every circumstance. Deposit within these glands always signifies concurrent deposits in the inaccessible mediastinal glands.

The two main points to be sought in an ideal operation are wide removal of the subcutaneous tissue around the mammary parenchyma and complete evacuation of the axilla. The first is secured by very carefully dissecting off the skin upward to the clavicle, downward to the seventh rib. The incision anteriorly touches the sternum, posteriorly the hinder fold of the axilla. In this way one incision serves for the subsequent axillary evacuation as well as for removing the breast; the resulting cicatrix is parallel to the ribs. No possible advantage can be gained by the longitudinal or even zigzag cicatrices that are so often seen.

Most of the skin, of course, should be removed from the immediate vicinity of the tumor. Sometimes the covering flap must be taken from one surface only of the organ. But the greatest pains to remove not only all the parenchyma but all the subcutaneous tissue compatible with the healthy vitality of the flaps should be taken. Then the axillary vein must be sought, and the entire contents of that cavity removed as high as the clavicle. It is seldom necessary to divide the pectorales; but occasionally that measure is requisite, when the divided sections should be resutured with catgut. In the fascia on the under surface of the pectoralis minor is commonly found a chain of minute nodules, probably no larger than a pin-head, running up toward the clavicle. These are deposits at the lymphatic valves, and can, as a rule, be easily scraped off with the finger-nail without division of the muscles. Bidigital examination, with the fingers of one hand inserted under the muscles as high as the clavicle, those of the other on the skin in the subclavian fossa, should never be omitted at the end of axillary evacuation.

Another very material point in practice is removing the single lymph gland upon the upper surface of the axillary vein. It is situated just below the crossing of the vessels by the pectoralis minor. Upon subsequent enlargement when not removed depends the horrible "brawny edema" so conspicuous in fat subjects, and so rebellious to treatment. The prevention of that one symptom of mammary cancer is alone worth a prolonged operation.

Excision after the manner of Halsted of the pectoral muscles *en masse* cannot be advised. The patient, according to Snow, will not be benefited, whatever may be the advantage to the operator. It is rarely necessary to keep the patient on the table longer than half an hour as the extreme limit. The more recent and favorable the case, the better it pays to spend the longer time, the aim being radical extirpation. In the more advanced cases is sought merely temporary removal of gross deposits, leaving behind the more minute cell-collections to be easily kept under subsequent control by opium.

Snow suggests that any palpable "recurrence" in an average case of carcinoma within less than two years after the operation he describes generally means bad work, and should indicate self-reproach; that the three-year period of immunity asserted by Volkmann and his followers to prove a cure is palpably absurd, as the marrow deposits very commonly make no sign of their presence until the close of that term,

often not for a year or two later. These are established almost concurrently with lymph-gland enlargement, and few cases undergo operation before that has taken place. One can never be absolutely certain of immunity in these mammary cases after even the most trivial carcinomatous growth.

PERONEUS LAMENESS DUE TO A HIGH POSITION OF THE PELVIS.

WITTHAUER *(Centralblatt f. Gynäkologie,* May 4, 1901) reports the case of a laboring woman on whom he operated for a tumor in the fornix vaginæ. This tumor was so adherent to the ligaments, the uterus, and the intestines, that it was necessary to open the abdomen and to remove the uterus and adnexa. In order to do this it was necessary to place the woman's pelvis in a very high position on the table. The patient steadily improved until the ninth day, when she complained of severe pain in the right leg; and on attempting to walk on the fourteenth day after the operation she found great difficulty in moving this leg; it "dragged" in walking. On electrical examination, although there was an entire absence of the reactions of degeneration, the normal reaction was weak. Under electricity and massage the patient slowly but steadily improved, and eight weeks later she was discharged cured. This lameness of the peroneus muscle seems to have been due to the pressure upon the peroneus nerve as the result of the high position of the patient's pelvis while on the operating table.

NEW OPERATION FOR THE RELIEF OF FLATFOOT.

FRANKE *(Therapeutische Monatshefte,* No. 4, 1901) says that the treatment of flatfoot depends on whether the condition is congenital or acquired, and on whether of long or short duration. Slight cases may be treated by massage, gymnastics, rest, and an appropriate shoe, but in marked cases, of more or less duration, operative interference is indicated. The author reports the case of a salesgirl, aged fourteen, who suffered from acquired flatfoot for two years. There was no history of traumatism or rachitis, and, excepting the affection, she was perfectly healthy.

The operation was performed under spinal anesthesia; an incision was made over the internal malleolus, and the tendon of the tibialis posticus muscle was exposed. Examination showed that there was an old phlegmonous inflammation of the tendon sheath, with some fluid. The tendon itself was hypertrophied and unduly long. The author shortened the tendon, and then brought the cut ends together with sutures. The sheath was then closed with sutures after being injected with an iodoform-glycerin solution. The wound was closed with sutures, without drainage, and the foot was then encased in plaster bandages while strongly supinated and adducted. The plaster cast was removed three weeks later and it was then found that the wound had healed by first intention. The patient was allowed to walk one week later, and was discharged five weeks later with an absolutely perfect foot. The author says that the spinal anesthesia was in every way most satisfactory.

Reviews.

ANATOMY: DESCRIPTIVE AND SURGICAL. By Henry Gray, F.R.C.S. Edited by T. Pickering Pick, F.R.C.S., and Robert Howden, M.A., M.B., C.M. A Revised American from the Fifteenth English Edition. Copiously Illustrated.

Philadelphia: Lea Brothers & Co., 1901.

Manifestly it is a work of supererogation to review in any way a book which is as familiar to the entire medical profession as Gray's Anatomy. It is to medicine what Blackstone is to law, a standard and classical work which, year after year, maintains its popularity and hold upon the profession, notwithstanding the entrance into the field of many newer works which possess the advantage of novelty in addition to any peculiarly good qualities which they may possess. The book has been fortunate in that it has far outlived the lifetime of its author, and again fortunate in that its various revisers have kept it up to date in a wonderfully complete manner, have always been well chosen, and have shown so much interest in their work that no one can justly say that more recently written works are more accurate and complete. There are several peculiarities of the book which go to make it popular: first, the fact that it is one to which surgeons can turn for accurate information; secondly, it is also one which the student can use with one hand while he dissects with another, and thereby carry out his dissections conscientiously and in accurate detail; and finally, it is encyclopedic in its scope and in the thoroughness with which it describes anatomical facts. The medical man who has not at some time in his career been brought in intimate contact with Gray's Anatomy must be a *rara avis.*

THE PRACTICE OF OBSTETRICS. By American Authors. Edited by Charles Jewett, M.D. Revised and Enlarged. Copiously Illustrated in Black and White, with Colored Plates.
Philadelphia: Lea Brothers & Co., 1901.

The first edition of this systematic work by a number of authors appeared two years ago. It is not one of the so-called Systems of Obstetrics which is composed of several volumes, but all of the nineteen contributors condense what they have to say into the 800 octavo pages which make up the book. In its preparation the editor and publishers have called to their aid the newer methods of illustration which are so valuable from both the point of view of the student and the practitioner. Some of the illustrations are very lifelike, and all of them are good. Some of them are photographs, some are colored lithographs, and some are black and white drawings. Most of the illustrations showing the various positions of the fetus during parturition are in outline. The lithographs which show the appearance of the nipple and its areola in the various stages of pregnancy are unusually good, and particularly so when we consider that these changes are exceedingly difficult to reproduce in colors.

The portions of the book which seem to us of particular interest are those which deal with the pathology of labor, the pathology of the puerperal period and obstetric surgery. The contributors to the Department of Pathology of Labor are Dr. Cameron, of Montreal, and Dr. Webster, of Chicago, who begin the subject with the anomalies of the mechanism of labor and of the expellent forces. The following chapters are by Dr. Jewett upon the anomalies arising from disease and hemorrhages, and then follows a chapter by Dr. J. Clifton Edgar which deals with eclampsia. The readers of the THERAPEUTIC GAZETTE are well acquainted with the views of this obstetric practitioner because of his contribution made to the August number of the GAZETTE, in which he formed one of a number who expressed their views in regard to the use of veratrum viride in this condition. We are glad to see that he points out the importance of estimating the urea in the later months of pregnancy, and the consequent importance of trying to increase its elimination in those cases where it seems scant; not because urea itself is particularly dangerous when retained, but because its excretion is an index of the excretion of other substances which are deleterious. He also emphasizes the important point that the maternal mortality from eclampsia diminishes progressively from the antepartum to the postpartum states; the death-rates being greater during pregnancy, less during labor, and lowest when the attack occurs for the first time after the birth of the child. The lines of treatment which he lays down are as follows: Reduce the amount of nitrogenous food to a minimum; limit the production and absorption of toxic materials in the intestines and the tissues of the body, and assist in their elimination by improving the action of the bowel, the kidneys, the liver, the skin, and the lungs; thirdly, if necessary, remove the source of the fetal metabolism and of peripheral irritation in the uterus by the emptying of that organ. Once the convulsions have been developed, the objects are to control the convulsions; to empty the uterus under deep anesthesia by some method which is rapid and that will cause as little injury to the patient as possible; and thirdly, eliminate the poison or poisons which we presume cause the convulsions. For the control of the convulsions the writer's preference is for chloroform, veratrum viride, and chloral, and not for morphia. Ten to twenty minims of the fluid extract of veratrum viride should be given subcutaneously as the initial dose, and ten minims every half-hour until the pulse remains below 60.

Jewett's Obstetrics presents the advantage of containing in a small bulk the views of a number of competent obstetricians, and yet it is no larger than some of the works on obstetrics written by a single author. It is a work in which the active obstetrician will find comfort when in need.

A TEXT-BOOK OF MEDICINE FOR STUDENTS AND PRACTITIONERS. By Dr. Adolf Strümpell. Third American Edition. Translated by Herman F. Vickery, A.B., M.D., and Philip Coombs Knapp, A.M., M.D. With Editorial Notes by Frederick C. Shattuck, A.M., M.D. Freely Illustrated.
New York: D. Appleton & Co., 1901.

Be the number of excellent books upon a given subject never so great there still remain certain works to which the experienced practitioner will turn more readily than he turns to others, thereby unconsciously placing his stamp of approval upon what he thinks is the best of those before him. Ever since the appearance of the first American edition of Dr. Strümpell's work, it has been a text-book to which the writer of this review has frequently resorted. Lacking,

in its American translation at least, the verbosity of most German works dealing with scientific subjects, it contains an immense amount of good clinical information based upon a large experience on the part of its author, and fortified by the additions which the American translators, and editors, have seen fit to make on many pages. The present edition is prepared from the thirteenth German edition, and we learn from the author's preface that the singular qualities of the work which we have mentioned have caused it to be translated into French, English, Italian, Spanish, Russian, modern Greek, Turkish, and Japanese, and that several of these translations have had more than one edition.

It is interesting in looking over the pages of the work to notice how the illustrations have improved with the publication of different editions. In some places illustrations which occurred in an earlier edition still exist, and these when compared with the more modern methods are crude and unsatisfactory. The translators have embodied in the articles a good deal of information which otherwise would not have appeared, as it has been collected since the German edition was published. This is particularly the case in the articles upon malaria, among which the function of the mosquito in spreading the disease may be cited. Very little attention is given to the subject of malarial hematuria and hemoglobinuria. Indeed, hemoglobinuria is only discussed as a part of certain affections not in any way connected with malarial fever. The work is not as strong in therapeutics as it is in diagnosis and pathology. Indeed, in some instances, the therapeutic consideration of certain conditions is quite lacking. Notwithstanding this one defect it is, as we have already intimated, emphatically a most useful book of reference for the graduate physician. For the undergraduate it is almost too complete and exhaustive.

THE PRINCIPLES AND PRACTICE OF MEDICINE. By William Osler, M.D. Fourth Edition.
New York: D. Appleton & Co., 1901.

Dr. Osler's work upon the Practice of Medicine is popular not only with his American coworkers, but also with his fellow countrymen on the other side of the Atlantic. He brought to the preparation of the first edition a wide knowledge of the pathological changes which are met with in the dead-room, coupled with adequate training in hospital wards, and like many another celebrated physician, he added to these two forms of experience that of the successful teacher not only in medicine but primarily in the study of physiology. He therefore possessed a knowledge which gave him a keener insight into pathological changes and physiological processes than other physicians not so well grounded in elementary medical topics. With the publication of each succeeding edition his wider clinical experience as professor of medicine at the Johns Hopkins University has been reflected in the pages of his book, and it now forms not only a complete summary of current medical knowledge, but is also a record topped by his personal experience. We are glad to see in the article on typhoid fever that while he is an ardent supporter of the employment of hydrotherapy in this disease, he clearly recognizes that certain conditions exist in which its use is inadvisable. The only point which it seems to us he does not sufficiently emphasize in giving directions as to the employment of cold in its various forms is the necessity of using friction and active rubbing, to remove heat from the body, to aid in the equalization of the circulation, and to produce reaction. On the other hand, we are glad to see that he makes a statement that medicinal antipyretics are used too often and too rashly in typhoid fever, and while they may be needed occasionally, the daily use of them is most injurious. Another point which strikes us as being of much interest is the brief note which he has upon the decrease of tuberculosis. It would seem from the statistics that he quotes that there is a very distinct diminution of pulmonary tuberculosis in many portions of the world, and it is a noteworthy fact that in Massachusetts the death-rate has fallen from 42 per 10,000 in 1853 to 21.8 per 10,000 in 1895. In all probability a part of this diminution in the frequency of the disease depends upon the fact that it is recognized as infectious and that more precautions are taken to prevent its spread. One would expect that with the improved methods of diagnosis and the use of the microscope there would be an apparent increase rather than a decrease in the frequency of this malady. We have gone over the volume with considerable interest and attention. It is really a new edition, and many parts of the work indicate the fact that the text has been revised and altered.

A Practical Treatise on Diseases of the Skin. By John V. Shoemaker, M.D., LL.D. Fourth Edition, Revised and Enlarged. Illustrated.

New York: D. Appleton & Co., 1901.

It is now three years since the third edition of this book on skin diseases appeared, and in view of the fact that it deals with one of the medical specialties we can fairly consider that the work is a success. The first edition appeared some thirteen years ago. On opening its pages we first meet with a frontispiece which illustrates a case of psoriasis. When we compare it with the very excellent chromolithographs which have recently been published in other works on the skin, we cannot help feeling a regret that the publisher has not employed a better process for the reproduction of such a typical disease. The same criticism, however, does not hold true in regard to the text, which reveals the fact that the author is in active dermatological practice, and that he has also kept himself well in touch with literature, for foot-notes continually remind us of the authorities with which he indorses his personal statements. Having called attention to the comparatively poorly executed colored plate which opens the book, it is only fair to state that quite a number of the other colored plates which follow seem to us much better in their execution, and some of the plain black and white plates are excellent. Not only is adequate attention paid to the therapeutics of skin diseases throughout the text, but the volume closes with a formulary containing 100 pages which gives prescriptions which the author believes to be of advantage in the various diseases under which they are named. Those who desire a complete and exhaustive work on dermatology will find such a one in this, whereas those who require more copious illustrations with less text will perhaps be better suited if they purchase one of the numerous atlases which we have recently reviewed.

A Photographic Atlas of the Diseases of the Skin. By George Henry Fox, A.M., M.D. Part V.

Philadelphia: The J. B. Lippincott Co., 1901.

This fasciculus contains articles on sycosis, scrofuloderma, syphiloderma, papular eczema, and morphea. We have already called the attention of our readers to the four preceding fasciculi. The present fasciculus well maintains the reputation of its predecessors. It is done so well that it imbues one with a greater interest in dermatology than previously existed, for the illustrations are so good that a diagnosis, except in very obscure types of skin disease, ought not to be difficult after an examination of these plates. When we remember that Dr. Fox has been for many years a most enthusiastic photographer of skin disease, we can readily understand that the present work is the result of a large series of excellent photographs.

A Ready Reference Handbook of Diseases of the Skin. By George Thomas Jackson, M.D. Fourth Edition, Revised. Freely Illustrated.

Philadelphia: Lea Brothers & Co., 1901.

Still another book upon diseases of the skin comes to us for notice and review. It is difficult to find words to exactly express the function of the book before us. It is by no means as complete and exhaustive in its attempt as is the book of Dr. Shoemaker that we have just reviewed, nor is it as copiously illustrated as the work of Dr. Fox, for the latter is an atlas accompanied by descriptive text. The present volume is exactly what its title indicates—a ready reference handbook; a small octavo, covering it is true some 600 pages, and ending with a formulary as have the other books which we have noticed. The illustrations do not profess to be anything more than ordinary wood engravings in the majority of instances, but they are well used, and sufficiently clear. The text is of a quality which commands attention by reason of its accuracy and the experience of its author. Naturally, from its size and scope it is the least expensive of the three works that we have noticed in this issue. It is emphatically a book for the medical student and busy practitioner.

The Medical Record Visiting List for 1902.

New York: William Wood & Co., 1901.

This Visiting List is about the size of its competitors in the market, and differs from them solely in the preliminary material which it contains. In this preliminary material there is a calendar; tables establishing the probable duration of pregnancy; the equivalents in temperatures, weight, capacity and measure; a list of formulæ for subcutaneous injections; brief directions as to the treatment of poisoning and other emergencies; a description of the signs of

death and hints on the writing of wills. The list is in every way a most desirable one.

THE PHYSICIAN'S VISITING LIST FOR 1902.

Philadelphia: P. Blakiston's Son & Co., 1901.

This is the fifty-first year of the publication of this list, a list which was begun soon after the foundation of the house which still produces it. This length of life in itself indicates that it meets the needs of a large number of the profession. It contains in the first pages the information commonly given in all such books, in regard to dosage, the comparison of thermometers, and the treatment of certain emergency conditions, the remaining pages being devoted to space for the record of patients visited.

THE MEDICAL NEWS VISITING LIST FOR 1902.

Philadelphia: Lea Brothers & Co., 1901.

This list contains in its opening pages an alphabetical table of diseases with appropriate remedies; a table of doses, and sections on examination of the urine, artificial respiration, incompatibles, poisons, and antidotes; a diagnostic table of eruptive fevers, and a full-page plate showing at a glance the incisions for the ligations of the various arteries. We have already referred to this plate in earlier notices as being a valuable addition to the book. The Medical News Visiting List is gotten out dated for thirty patients a week; month'y, undated, for 120 patients per month; and perpetually, undated, for sixty patients weekly per year. It is well bound and gives excellent service.

DISEASES OF THE INTESTINES. By John C. Hemmeter, M.D., Ph.D. In Two Volumes. Volume I. Illustrated.

Philadelphia: P. Blakiston's Son & Co., 1901.

In this the first volume of what Dr. Hemmeter evidently intends to be a monumental work upon diseases of the intestines, he deals with the anatomy and physiology of these parts; then with intestinal bacteria; with methods of diagnosis; with the general theme of the therapy and materia medica of intestinal diseases; and following are chapters upon diarrhea, constipation, enteralgia, meteorism, enteritis, colitis, dysentery, intestinal ulcers and intestinal neoplasms. One begins to wonder what the contents of the second volume will be. The chapter upon the intestinal bacteria has been written by Dr. W. R. Stokes; that upon diseases of the rectum by Dr. Thomas C. Martin, of Cleveland; and that upon the examination of the feces and urine by Dr. Harry Alder.

Dr. Hemmeter is already well known because of his useful and complete book upon the Treatment of Diseases of the Stomach, which reached a second edition some time ago. The present edition is illustrated by a large number of colored plates and full-page black and white pictures which are well chosen and well executed. Personally we do not see much advantage in certain illustrations showing test tubes in which bacterial growth is progressing, since photographs of such tubes are never satisfactory. The work is particularly strong in treatment, and is brought up to recent date by frequent references to current medical literature. We agree with the author when he states that from a large personal experience he has gained the impression that the so-called chemical intestinal antiseptics have a very limited range of utility. He even doubts the advisability of adding antiseptics to the water which is used for lavage of the bowel, because experiments made by him have proved that it is impossible to make the mucous membrane of the bowel aseptic, and he believes that medicines when taken by the mouth accomplish even less. Further, he believes that in some instances the normal intestine possesses bactericidal properties which are often injured by our efforts to combat intestinal autointoxication, and that this view is likely true seems to be proved by the fact that while there are in the bowel certain microörganisms capable of a malign influence, there are others whose function is certainly benign, and which probably aid the body in combating those which are malignant.

Volume I covers 742 pages, but this does not give an idea of exactly how much information is contained in it. The type is large and the spacing generous. Some publishers, more saving of paper, would perhaps have printed the same amount of information in one hundred less pages.

A SYSTEM OF PHYSIOLOGIC THERAPEUTICS. Edited by Solomon Solis Cohen, A.M., M.D. Volumes III and IV.

Philadelphia: P. Blakiston's Son & Co., 1901.

A few weeks ago we took pleasure in reviewing the first volumes of this excellent system dealing with the employment of remedial measures other than drugs. They

dealt with electrotherapy. These deal with the use of climate as a remedial agent, and particularly with health resorts and mineral springs. Volume III is written by F. Parkes Weber, of London, with the collaboration for America of Dr. Guy Hinsdale, A.M., M.D., of Philadelphia. The book opens with a discussion of the principles of climatotherapy and a consideration of ocean voyages, the Mediterranean, European, and other health resorts. There is also a free use of illustrations for the purpose of rendering the text easily understood. Passing over the portions of the work which are devoted to the general principles of climatology, which are of course important considerations, we come to the description of the particular health resorts which are on the coasts of the Atlantic, in Italy, and in those European districts which have been known for years as useful resorts for those who are ill with pulmonary or other affections. Some of the descriptions of these places are scarcely sufficiently complete to give the physician very clear ideas of the practical application of the uses to which they are put, and in that sense in some portions the book is scarcely more than a guide-book, but it must be remembered that preceding the description of each locality there is a discussion of the general principles involved in the employment of the measures which are considered valuable at that locality.

The second book on this subject appears simultaneously. It is also devoted to climatology, but deals with the health resorts of Africa, Asia, Australasia, and America, and finally with what is called Special Therapeutics. There is also a special article on the Hawaiian Islands by T. M. Coan, of New York. It seems to us that this volume contains even better material than its predecessors upon European climate. It is larger, and the statements which are made concerning the various resorts named are adequate and complete. To the general practitioner both of these volumes will probably possess a greater interest than their predecessors upon electrotherapy, which, after all, is a branch of treatment not commonly resorted to by the average physician.

There can be no doubt that physicians in general and American physicians in particular are shamefully ignorant of the climatic resorts which exist in their own country, and still more in darkness concerning those which exist elsewhere, and it is by no means unusual for patients to know far more about these resorts than their physicians, either because they have visited them or because they have been careful to read largely concerning them. With these books on the physician's shelves he can prepare himself to give rational advice in regard to resorts to which his patients should be sent.

A Reference Handbook of the Medical Sciences Embracing the Entire Range of Scientific and Practical Medicines and Allied Sciences. By Various Authors. New Edition, Completely Revised and Rewritten. Edited by Albert H. Buck, M.D. Volume III. Copiously Illustrated.

New York: William Wood & Co., 1901.

We have only to look over the list of contributors to Volume III to perceive the fact that Dr. Buck has called to his aid in the compilation of this volume a large number of men who are well recognized as authorities in the subjects of which they write. Those who are unacquainted with the earlier edition of this handbook have little conception of the large amount of information which it contains. It can truly be said that it is to medical learning what the Encyclopedia Britannica is to general knowledge. Many of the chromolithographs are unusually good, and they are noteworthy because they really do illustrate pathological conditions and are not designed simply to be pretty pictures which will attract the buyer's eye. The present volume extends from the word "Choralamid" to "Equinox," and worthily maintains the reputation of its predecessors.

Correspondence.

LONDON LETTER.

By Raymond Crawfurd, M.A. Oxon., M.D., F.R.C.P.

Since our last letter there has been on the whole a diminution in the prevalence of smallpox in London, and inasmuch as after so many weeks the disease has shown no tendency to become epidemic, we may fairly hope that it is in process of dying a natural death. Over and above the good purpose it has served in adding enormously to the number of the population that are efficiently vaccinated, it has opportunely brought to light the fact that a very large proportion of the vaccine on the market is partially or

wholly inert. It is to be hoped that steps will be taken to remedy this defect, against the day of reckoning.

An instructive discussion on the symptoms and treatment of movable kidney was initiated by Henry Morris at the Medical Society of London. His opinion on points in dispute of renal surgery is of special value from his extensive experience. He dismissed summarily the contention that the gastric symptoms familiarly associated with movable kidney are evidence of associated gastroptosis. The two may and often do occur together, but their independence is clearly shown by the frequency with which fixation of the kidney abolishes the symptoms referable to the stomach. There was pretty general agreement with Mr. Morris on the part of every speaker that very little benefit must be expected from recumbency, even when complete and prolonged. In cases in which rest is followed by improvement, the condition is probably combined with general enteroptosis. He considers that nephropexy is the only justifiable operation, but Spencer holds that nothing short of nephrotomy with fixation is adequate in cases associated with hydronephrosis and lithiasis. Dealing with cases in which nervous symptoms predominate, the result of operation is so comparatively unsatisfactory that Morris considers every palliative procedure should first be given a thorough trial. Renal crises, frequently recurring, are always an indication for operation. Morris employs three types of operation in different cases—Vulliet's, his own, and Tuffier's. Vulliet's he considers not good in persons very sensitive to pain, or in short fat persons.

At the annual meeting of the Medico-Psychological Association Dr. Dawson recorded his observations on suprarenal extract in the treatment of mental diseases. He puts forward certain definite suggestions as to the pharmacology of the drug:

1. The chief physiological action of extracts of the suprarenal gland is increase of arterial pressure, but they also produce a tonic effect upon the heart, and on muscle generally, and possibly some diminution of metabolism.

2. Owing to the transitory nature of the effects produced by intravenous injection of the extract, suprarenal must be given by the mouth if any prolonged action is to be obtained.

3. Both for *a priori* reasons and as a matter of experience, it appears to be indicated in conditions of excitement and exaltation, in which state the blood-pressure is usually found to be lowered.

4. Administration for a certain length of time will probably be found necessary in most cases, in order to produce any very marked effect, at least where excitement is violent.

5. Although the state of the blood-pressure, as a rule, forms a convenient indication for its use, high pressure does not absolutely contraindicate it, if there is some reason to think that it is not associated with the mental state, as an abnormally high pressure may still be lower than the average of an individual case.

6. Suprarenal extract seems unlikely to be of benefit in cases of melancholia and where there is much stupor.

7. It seems probable on the whole that the form of insanity in which it will be found most useful is acute mania of fairly recent origin uncomplicated by stupor.

Dr. Dawson very properly considers that these suggestions should be taken as merely tentative, as the circumstances of the observations were open to many objections.

Soltau Fenwick claims that after prolonged trial he has found suprarenal extract of the greatest value in the treatment of severe hematemesis. His routine is to administer ten fluidounces of a freshly prepared decoction, containing two grains of the desiccated gland to the ounce, as soon as possible after an attack of hematemesis, and to repeat the dose at the end of two hours. He has never observed any unpleasant symptoms, though the first dose may produce a desire to vomit. He considers it most effectual in cases of recent ulcer situated near the cardiac end of the stomach, as, for instance, in the acute ulcer of young adults, and in that which sometimes complicates cirrhosis of the liver and valvular disease of the heart. Contrariwise he thinks its value is least in chronic ulcers of the pyloric region, where contraction of the bleeding vessel is prevented by its firm investment of fibrous tissue. He also finds that the constant slight hemorrhage of gastric cancer may be controlled by one dose daily, while enemata will often control the bleeding from an inoperable cancer of the rectum. It is difficult to see what special advantage Fenwick considers attaches to the large bulk of fluid in which he administers his relatively weak and variable prep-

aration of the gland, when the active principle of constant strength and easy solubility may be administered in so small bulk as to exert almost no distending force on the stomach, while exciting the smallest amount of movement. If it be to insure contact with the ulcer, will not any direct benefit be counteracted by the disadvantage of the weaker solution? and might not the same end be obtained by controlling the decubitus of the patient?

The Clinical Society of London discussed intracranial section of the second and third divisions of the trigeminal nerve for severe neuralgia. Morse described two successful cases by the Hartley-Krause method in which he had cut the second and third divisions and blocked the foramen ovale and foramen rotundum with Horsley's wax to prevent reunion of the nerves. Hutchinson showed five cases in which he had excised the Gasserian ganglion at distances of time varying from four years to six weeks, with perfect result. He considers that the only method should be the temporal route, and that Rose's pterygoid route should be completely abandoned, as it is impossible to make sure of obliterating the ganglion by the pterygoid route. He pointed out that involvement of the ophthalmic division is exceptional, and that when it is involved there is good reason to believe that the pain is reflexly communicated from the other divisions of the nerve; accordingly it is his custom to leave the lower part of the ganglion and not to interfere with the ophthalmic division. This procedure is justified by results, in that there is no persistence of pain in the ophthalmic division, and at the same time corneal anesthesia with its attendant complications is avoided; also there is no need to tie the middle meningeal artery and no likelihood of damaging the cavernous sinus. With regard to technique he prefers to use a large trephine and cutting forceps, and not to replace the bone, to the flap method. He considers that in skilled hands the mortality of the operation by the temporal route is probably not higher than ten per cent, and that with such a low rate there is no justification for postponing the operation till the patient becomes a nervous wreck from pain or morphine. Ballance held that it was advisable to remove the whole ganglion and also a portion of the nerve on the proximal side. He prefers to divide the operation into two stages, in the first of which the ganglion is exposed, and in the second stage, some four or five days later, removed. This diminishes greatly the shock, and makes the operation justifiable even in subjects of advanced age. He hopes the time will soon come when it will be possible to separate the sensory from the motor fibers, and to divide the former without the latter.

Hugh Walsham records in the *Journal of Pathology* some careful observations on tuberculosis of the cervical and bronchial lymphatic glands. The glands examined were advisedly those removed post mortem from cases of tuberculosis, rather than those of a more advanced stage, and therefore more susceptible of mixed infection, surgically removed. He holds that the enlarged glands so frequently associated with tuberculosis are far more often tuberculous than is generally supposed, if we take the presence of the tubercle bacillus or its involution forms as the criterion of tuberculosis. Their true character will often be overlooked if trust is put in naked-eye appearances—*i.e.*, in the presence of tubercles and indeed in cursory histological examination. Walsham has never failed to find the tubercle bacillus or its products in any case of complete caseation of a cervical or bronchial gland. He also maintains that there is no question that the tubercle bacillus is alone responsible for the scrofulous changes, though not of course for suppuration in a gland. He enumerates the following forms in which the bacilli are found in the glands: "Bacilli, some very long and thin, generally isolated, usually having a very beaded appearance resembling streptococci. Bacilli in bundles, generally of the short variety. Bacilli with buds, generally situated at one end, though occasionally two or three are found in the length of the bacillus. Bacilli bent at a right angle, the two limbs of which are always unequal; this is a very common form. Bacilli with small offshoots from the side, mostly nearer one end than the other—a rare form. Bacilli that take the staining reagent very badly, only coming out with a light pinkish tinge, being probably bacilli in a very early stage of disintegration," and Schrön's capsules, which are generally only found in the lymphatics at the periphery of the gland. Lastly he deals with the histological changes in the glands. The first is simple hyperemia with consequent swelling, and ranging from simple engorgement of ves-

sels up to actual extravasation into the gland. Pigmentation, probably due to absorption of pigment particles by the lymphatics from the adenoid tissue of the respiratory tract, and lardaceous change, may also be found. The earliest change in the gland substance proper consists in a proliferation of the adenoid reticulum with disappearance of the lymphoid cells. Walsham has himself previously indicated the existence of a histological change in some glands totally distinct from this, viz., a large-celled hyperplasia distinguished by the transformation of the normal gland tissue into large-celled tissue, consisting partly of rounded and polygonal cells and partly of spindle cells.

PARIS LETTER.

By R. H. Turner, M.D. (Paris).

Dr. Martinet has published recently an article on the principal indications of salicylate of soda. The most important, of course, is the action produced on pain in rheumatic fever, which seems to be specific. The second is that seen in gout. As for the third, it has been thoroughly studied by Dr. Chauffard, the well known liver specialist, and consists in its action on the liver. It is eliminated with the bile, which is increased in quantity. According to Dr. Chauffard, when there is a succession of attacks of bilious colic, the right treatment is a milk diet, then a milk diet with a certain amount of vegetables, and lastly a mixed diet with a small amount of meat. At the same time 20 grains of salicylate of soda and of benzoate of soda should be given daily in three doses, two pills of oil of Haarlem every week, and lastly alkaline baths with dry rubbing. Dr. Martinet also described the various signs of intolerance, such as gastric trouble, nervous symptoms, and especially cardiac symptoms, followed in some cases by death. It should therefore be remembered that it is well to give a cardiac stimulant when the heart's action is weak. Dr. Barth considers that absolute contraindication is found to the use of the drug in the following conditions: severe forms of nervous disease and alcoholism, organic diseases of the heart, ulcerative aortitis, vegetative endocarditis, degeneration of the myocardium, absolute or relative renal impermeability. According to Dr. Martinet such contraindications are only relative when the action of the drug can be closely watched. Pregnancy, old age, and recurrent rheumatism with visceral complications are relative contraindications.

At the recent Congress of Pediatrics, held at Nantes during the month of October, one of the most important subjects treated was that of the usefulness of operations in tuberculous adenitis. Dr. Broca, of Paris, who is a well known surgeon for children's diseases, read a report on this subject in which he said that medical treatment suffices in a great many cases. When an operation is found necessary, two methods are to be used—interstitial injections or extirpation. For interstitial injections two solutions are to be recommended—camphorated naphthol, and ether containing ten per cent of iodoform. When glands are simply hypertrophied or caseous, five to ten drops is to be injected. This injection is to be repeated every week, according to Reboul, with camphorated naphthol, and every day with iodoform, according to Durante. When there is suppuration, the pus should be withdrawn with the trocar before the injection is made. With the ether solution it is well to remember that certain precautions are necessary, on account of the excessive tension produced by the ether. The trocar should be left in for a few minutes, the end of the trocar being closed with the finger. Extirpation should not be undertaken immediately, but other methods tried first of all. In non-suppurative adenitis only the lymphomatous form should be operated on. Dr. Broca insisted on the difference that exists between forms of adenitis that have been treated by sojourn at the seaside and those operated on in the large cities.

Professor Berger, whose reputation for tuberculous and bone surgery is so great, said that he could not accept all the conclusions of Dr. Broca. He had had serious accidents with iodoform and ether. One condition of success is to repeat the punctures, but not the injections. Glandular masses should be extirpated.

Dr. Reynier, of Paris, surgeon at the Lariboisiere Hospital, said that extirpation should be resorted to only in cases of absolute necessity. He has seen one patient die as the result of the entrance of air into the veins. In another case immediate tampon-

ing of the vein saved the patient's life. The prognosis in adults is not the same as with children, as in the first case it is evident that there is tuberculous infection.

Dr. Boeckel, of Strasburg, made a distinction between monoglandular and polyglandular adenitis. In the latter case total extirpation is the only good method. He has statistics of 450 cases of extirpation with only four deaths—one from secondary hemorrhage, one of sudden death from apoplexy in an old woman, one case of albuminuria, and one of septicemia. A complete cure is generally obtained in two to three weeks.

Dr. Ménard, of Berck-sur-mer, made a few remarks on the seashore treatment. He has noticed that the maritime treatment increases at first the hypertrophy. When there are ulcerations or fistulæ the maritime treatment could bring about a cure. In cases where there is pus formation surgical means are necessary. He uses as an injection camphorated thymol, and has had only slight accidents in two cases out of three thousand injections. Camphorated naphthol, on the other hand, has caused him serious uneasiness. Extirpation is a far from serious operation in most cases, and Dr. Ménard never uses cutting instruments once the incision is made, but only his fingers, a sound, and a blunt curette. To prevent the formation of keloids, Dr. Ménard only makes sutures when he is absolutely obliged to do so. He has torn the jugular three times, and stopped its bleeding by placing a clamp, which was taken off after forty-eight hours. Keloids should not be removed, as they generally disappear after a year or eighteen months.

During April and May of last year quite a number of cases of fever were reported at Cannes, and it was said that there was an epidemic of typhoid fever in that locality. One of the physicians of the place, Dr. Roustan, has published an article on the subject in which he endeavors to make out that most of the cases of so-called typhoid fever were abdominal forms of grippe. This article, coming as it does just before the exodus that takes place yearly to the south, is written to dispel any anxiety which may exist as to the sanitary conditions of the place. The author speaks of foreign newspapers publishing unscientific articles, in which the malevolence shown toward the town of Cannes was dissimulated with difficulty. Dr. Roustan stated in his article that two distinct forms of fever were seen —one quite rapid in its progress and accompanied by gastrointestinal disturbances; this would seem to be abdominal grippe. The other was more insidious and more lasting, and would appear to be typhoid fever. Dr. Roustan tried streptococcic serum in a certain number of cases, and obtained some good results.

At a recent meeting of the Society of Therapeutics a communication was made by Dr. Mathieu on the treatment of gastric stasis by evacuation of the stomach and immediate injection of powdered meat. This method is carried out on patients suffering from Reichmann's disease. (Hypersecretion of gastric juice, with dilatation, spasm, and ulcer.—Ed.) No washing out is done, and as soon as the greater part of the gastric residue has been removed, 40 to 100 grammes of meat in one-half to two-thirds of a liter of milk is injected. Besides this some food is given, as well as in certain cases the alkalies and belladonna, though this is not generally done. This treatment has given excellent results in simple forms of Reichmann's disease, when there is but a small amount of detritus left in the stomach. When it does not succeed, some more important disease should be suspected, such as cancer of the pylorus. When, therefore, this treatment does not give good results, an operation is indicated, provided there are no contraindications.

Dr. Soupault, who may be said to have made a specialty of Reichmann's disease, which he calls gastrosuccorrhea, said the disease has both a medical and a surgical treatment. Medical treatment consists in complete physical and moral rest, and in extreme cases rest in bed; perfect rest of the stomach by insisting on partial abstinence or even absolute diet during twenty-four to forty-eight hours in severe cases. The routine treatment by drugs consists in the use of alkalies associated with subnitrate of bismuth. The wet compress has remarkable calming effects. As for the use of the stomach tube Dr. Soupault believes it should not be used more than twice a week, and without irrigation of the stomach. Good results are obtained in quite a number of cases, but a complete cure is rarely assured. Relapses take place frequently, every year or two the patients being exposed to such complications as hemorrhage, perforation, or cancer of the

pylorus. For these various reasons an operation seems to be the best treatment. According to Dr. Soupault ulceration of the stomach is the real cause of the disease. Clinical observations as well as anatomical investigations in eighteen laparotomies and two autopsies have shown the truth of this assertion. Some surgeons believe that spasm of the pylorus may be the cause of Reichmann's disease, but Dr. Soupault considers that a too hurried examination may lead to failure in recognizing an ulceration. The stomach should be opened and its inner surface examined. Surgical treatment brings about good results. The patients increase in weight and strength; the physical signs are not much modified, however. Dr. Soupault said in conclusion that he considers gastrosuccorrhea necessitates surgical rather than medical treatment.

Professor Bardet said he thought it unwise not to try medical treatment. In a great number of cases the regimen indicated is not what should be given. According to Dr. Bardet too large a quantity of food is administered: for instance, 100 grammes of powdered meat is too much, for it represents 500 to 600 grammes of fresh meat. Moreover, two to three liters of milk is also given, which makes altogether too large a quantity of albuminous food. Dr. Mathieu answered that he considered his patients could stand so large a quantity of food because they had grown quite thin, and needed the nourishment.

Dr. Chantemesse has been trying his antityphoid serum on one hundred cases of typhoid fever, and has just published the results obtained. In his service he treated twenty-nine cases, and they all recovered. At the Tenon Hospital there were forty-four cases with fourteen deaths when the usual treatment was employed, and only four deaths out of thirty cases when the serum was injected. All cases injected before the tenth day recovered. There were in all six deaths—three from intestinal perforation, one from pneumonia, the fifth was injected on the twenty-fifth day only, and the sixth died from sacral gangrene. There were also two desperate cases injected as a last resort. One patient who received the serum the sixth day had a normal temperature four days after. In some cases it is found necessary to repeat the injection after seven or eight days. The quantity of urine excreted is very much increased, three or four liters being sometimes passed. Twenty-four to forty-eight hours after the injection there is hyperleucocytosis; soon the myelocytes are less numerous, while the eosinophiles are more frequently found, as well as the mononuclear forms and the granular polynuclear cells. The quantity of serum injected is about ten to twelve cubic centimeters, and if it is found necessary to make a second injection the amount is smaller, five to six cubic centimeters. This serum is prepared with difficulty. The toxin of the microbe is injected into the horse, and it is only after several months' work that the serum is ready. Its strength varies to a certain extent with time.

DR. MITCHELL'S ARTICLE ON APPENDICITIS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: The article by Dr. Mitchell in the November number of the GAZETTE, concerning appendicitis, was of much interest to me, as I doubt not it was to all who read it. Concerning some of the doctor's statements and implications, however, I am very anxious to have further enlightenment; and I trust he will find time to give his authorities or references for the following points. The subject is such an important one that I am sure the author of the paper will be glad to give us somewhat in detail the basis for his propositions.

First, Dr. Mitchell states that "there are many cases of catarrhal appendicitis, operated upon early, which would have recovered just the same under skilled medical treatment." Will the doctor please state how one may know in advance whether any given case of catarrhal appendicitis, seen for the first time, is going to recover without intervention. What certain sign or symptom is there that any certain case of appendicitis is merely "catarrhal," and how can we be sure throughout its course that it is going to continue so? If the Doctor can give us information on this point, it will go far toward settling a long disputed question. I have a theory of my own in the matter, and should be very glad to know what the prognostic point is on which Dr. Mitchell confidently relies.

Secondly, the Doctor states that "there are thousands of healthy appendices removed yearly, and credited to the brilliant achievements of modern surgery." May we please have some statistics on this point? I

presume a healthy appendix is occasionally removed; but I had no idea the number ran up into the thousands.

Thirdly, in regard to perforation, the statement is made that "if we are lucky enough to see our patient at the time it occurs, we must hasten him to the operating table, etc." May we be informed what pathognomonic sign there is which enables us to say at any moment, "A perforation is now occurring"? I did not suppose the science of diagnosis had gone so far that it enables us to tell within a few hours, even, when a perforation occurs; indeed, I did not know before that any one could assume to say positively that a perforation had occurred at all, to say nothing of the time element in the case.

Fourthly, and in the same connection, will the Doctor please tell us what course of action he advises in case we are not lucky enough to see our patient at the time perforation occurs.

Fifthly, I should like to be referred to the statistics on the relative frequency of perforation in typhoid fever and appendicitis. Dr. Keen has covered the matter of typhoid perforation pretty thoroughly in his "Surgical Complications and Sequels of Typhoid Fever;" I was not aware that any similar statistics relating to appendicitis had been collated.

Sixthly, how does the Doctor make use of the Widal test in diagnosing his cases? From Cabot's work on the subject it would appear that, at the very best, there are a great many cases of typhoid that do not show the Widal reaction until late in the disease, and a rather low percentage show it during the first two or three days, the time when the diagnosis between typhoid and appendicitis must be made, if it be of any practical value. I should be glad to know in how many cases that have come under his observation the Doctor was able to make an early diagnosis by the help of the Widal test.

There are some points in the treatment proposed to which I would take exception, but I have no desire to enter upon an argument in this connection. The Doctor has written a rather positive article; and it seems but fair that he should give the facts, or put us on the track of them, upon which he bases his statements to which I refer above. Appendicitis is such an overwhelmingly interesting subject to the entire profession, that any one who writes of it owes it to his audience to speak with the utmost sincerity and candor. If Dr. Mitchell will elucidate these points that I have mentioned, I am sure that many of his readers, as well as myself, will be under obligation to him.

I am, sir, with great respect,

Yours truly,

FREDERICK T. WRIGHT, M.D.

CALUMET, MICHIGAN.

THE TREATMENT OF THE MORPHINE HABIT BY HYOSCINE.

In connection with the plan of treatment outlined by Dr. Lott in the Progress colums of this issue of the GAZETTE, the following letter is of interest:

To the Editor of the THERAPEUTIC GAZETTE.

SIR: In answer to the statement in your letter that "you see no radical objection to your (my) plan of treatment, but on the other hand you confess that you do not see how it does good, and you should think 1-100 grain hyoscine every thirty minutes would produce very powerful effects," etc., I will say that I do not know how it does good except that it prevents those terrible symptoms of pain and collapse from which a patient suffers when his daily dose of morphine is withdrawn from him. Under the influence of hyoscine he passes through that period without being aware of any pain, or chills, or hot flushes, or spasm, or cramp; and when he comes from under the hyoscine he feels that he is a free man and has no need or desire for morphine or whatever drug he was taking.

My experience is entirely empirical. I do not know how it acts. I have used it so long and on so many patients that I can afford to be dogmatic, and stand on the positive statement that the treatment is a success, is devoid of danger in careful hands, is without pain, and will free any person from the morphine habit, no matter how much he used per day, or how long he has been a habitué. Morphine and opium paralyze to some extent the nervous system and the vasomotor nerves. The first effect of cocaine, opium, alcohol, etc., is to stimulate the nervous centers in those who have formed the habit.

Hyoscine is powerful in its stimulation of the nerve centers; its action is not depressing to the patient, and is opposite to that of morphine. Hyoscine dilates the

pupil, relaxes the bowels—in fact, relaxes the entire system—and a patient under its influence could not walk, for if permitted to get up he would fall.

I do not claim it to be a complete antidote for the drugs mentioned. A person taken off of morphine is not disgusted with morphine so he could not take it again. The hyoscine simply bridges over that period of two or three days of suffering, which is beyond human endurance, that comes to the habitué if his drug is suddenly withdrawn from him. I believe that if one could undergo the suffering for the first two or three days after the withdrawal of his dose he would be over the morphine, and his recovery would be a question of time, depending on environment and recuperative power.

On November 2 I put a man forty-eight years old under treatment. He had been using a drachm of morphine by the mouth every day for ten years. The patient was of course emaciated—indeed, he was the picture of despair. He was a telegraph operator by occupation, but blacklisted on all the lines of railway. Every particle of medicine was given hypodermically, and tablets were used. I wish to state that this man was the hardest one to treat that I have had, and he took twice as much hyoscine as I have ever given to any one else. And yet from start to finish there was at no time the slightest cause of alarm or uneasiness. He is perfectly well, goes everywhere in town, has gained ten pounds in weight, and is bright and cheerful. He says he has no pain, sleeps seven hours a night, eats well, and has no desire for morphine or other drug. I know positively that he is not taking morphine, for he was in my office on a recent evening, and I saw and heard him sneeze four times, a thing that will never occur to one under the influence of opium. A patient will never sneeze or yawn during the time he is under the influence of opium.

I regret that I am not able to be brief in these letters, and I fear that I will absorb more of your time than is proper, but so impressed am I with the fact that the profession are not familiar with this plan of treatment, and having had such success with it myself, that I wish every physician to know of it, so that the greatest number of the unfortunate victims of the habit may be relieved.

The amount of hyoscine to be given at a dose, and the intervals between doses, are matters to be adjusted in each case. Some patients require more than others. The end to be obtained is hyoscine intoxication, and then to keep it up during the period mentioned—from twenty-four to seventy-two hours—the great majority requiring forty-eight hours. Very truly yours,

CAMERON, TEXAS. M. K. LOTT, M.D.

[Dr. Lott has contributed another paper on this subject, which will appear in an early issue of the GAZETTE.—ED.]

TONGUE TRACTION IN ASPHYXIA.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: I desire to report the following cases, which I think are interesting as indicating the value of traction of the tongue in the treatment of various forms of asphyxia:

The first case is that of a baby, five days old, who became cyanotic and insensible, the evident cause being obstruction of the upper respiratory tract. Swallowing was impossible. I found that by pulling the tongue forward the baby was enabled to take a good inspiration, but that if I allowed the tongue to drop back into the throat the asphyxia immediately became pressing. By the maintenance of this method for a considerable period of time the asphyxia passed away and the child began to breathe normally. I have since employed this method in other cases of difficult respiration in young children with advantage. My idea is that by keeping the tongue pulled well forward, taking its weight from the epiglottis, I open the respiratory passages. I had learned this method, first of all, from having employed it in the case of my own son, who had a severe attack of scarlet fever in the spring of 1894, and who for several months afterward could not sleep unless his tongue was pulled forward so that he could breathe. Usually, by pulling the tongue well forward inspiration was permitted, and after the attack of suffocation passed off normal breathing was reëstablished.

I know that this method is somewhat allied to that of Professor Laborde in his treatment of asphyxia, and it seemed to me that my experience with it was worthy of being reported.

Very truly yours,

A. RADCLIFFE, M.D.

WAUKEGAN, ILL.